

EDUCATION DEPARTMENT.
NEW ZEALAND.

NOVEMBER EXAMINATIONS,

1914.

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EXAMINATION PAPERS

(WITH EXTRACTS FROM EXAMINERS' REPORTS).



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1915.

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NEW ZEALAND.—EDUCATION DEPARTMENT.

NOVEMBER EXAMINATIONS.

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EXAMINATION PAPERS.

No. 1.—ELEMENTARY SCIENCE.—*For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed : One hour. Four questions only are to be attempted.

1. State as fully as you can the purposes of the leaves of a plant. What plant-foods are not supplied through the roots ?

Or,

Describe, using drawings, the germination of a grain of wheat or of a French bean when it is placed in warm, moist ground.

2. Give a short account of the life-history of the frog or the bee (preferably of the worker-bee if the latter be selected).
3. If you wanted to obtain young plants of (a) apple-tree, (b) potato, (c) rhubarb, and (d) turnip, how could you best produce them from an apple-tree, a potato-tuber, a rhubarb-plant, and a growing turnip respectively ?

Or,

If you had a piece of ground overgrown with sorrel that had just seeded, what steps would you take to free it from weeds and make it suitable for a garden-plot ?

4. For what plants are nitrogenous manures used, and why ? Name several manures that provide plants with nitrogen.

Or,

How would you prepare the ground for growing carrots, cabbages, tomatoes, scarlet runners, sweet peas, potatoes, or onions ? (Answer *three* only.)

5. How is cheese made? Mention as many varieties as you can, and explain the differences between them.

Or,

Explain briefly *three* of the following :—

- (a.) The purpose of aerating milk.
 - (b.) Why salt is added to butter.
 - (c.) Why it pays to handle milch-cows gently.
 - (d.) Why milking-machines and vessels for holding milk should be cleansed as soon as possible after they have been used.
 - (e.) What uses are made of whey.
6. Draw *three* of the following, and explain the purpose for which each of those you select is used: (a) Lactometer, (b) burette, (c) pruning-knife, (d) inclined plane, (e) railway-signal, (f) lever of the first order, (g) rain-gauge, (h) protractor.
7. Why is milk regarded as a perfect food? State why it should not be brought to the boiling-point, and what percentage of fat you would expect to find in pure milk.

Or,

Why does a dish of jam left exposed to the air, especially in warm weather, become frothy and acquire a peculiar taste? Of what gas are the small bubbles formed in the jam composed?

8. When is water said to be “hard,” and why is such water troublesome for use in the tea-kettle and in the wash-tub? Explain a method of softening water for drinking purposes and for washing clothes respectively.

Or,

Write a short description of the teeth contained in the permanent set of a man. State fully what precautions are necessary to keep them in good order, and why decayed teeth are harmful to the general health.

9. Draw a common pump, and explain how it works.

Or,

State how you would make a simple barometer, and explain why the probable state of the weather can be foretold from the height of the mercury-column.

10. If you were provided with a graduated measuring-cylinder and a bag of small shot, how would you find the volume of a single shot?

Or,

State approximately the specific gravity of (a) water, (b) lead, and (c) cork. How would you determine the specific gravity of milk?

11. Show by means of a sketch the shape of the teeth of an ordinary hand-saw. What tools are used to keep a saw in order? How many points to the inch would one look for in a crosscut and a rip saw respectively? What precautions should a person take in cutting a board across exactly at right angles?

Or,

What kind of material and what tools would you use in order to make a small pair of outside callipers? Sketch the callipers, and describe how you would make them.

12. What fish in New Zealand are commonly used for the table? Explain how you would prepare and serve up a dish of boiled fish and parsley-sauce.

Or,

Describe the difference between stewing and boiling meat. Say how you would boil a leg of mutton, and state what errors might spoil the dish.

13. Explain any three of the following :—

- (1.) Why the cow chews the cud.
- (2.) Why worms are seen above ground after rain.
- (3.) Why ground should be freely hoed in dry weather.
- (4.) Why vegetables are eaten with meat.
- (5.) Why oil is used in sharpening edged tools.
- (6.) Why baking-powder makes scones light.
- (7.) Why copper nails are used in building boats.
- (8.) Why a ball bounces.
- (9.) Why aeroplanes fly though they are heavier than air.
- (10.) Why a soldering-bit is made of copper.

No. 2.—ELEMENTARY SCIENCE.—For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.

Time allowed: One hour. Four questions only are to be attempted.

1. State, with examples, the different methods by which plants climb.

Or,

Say what pollen is, where it is found, and how it is scattered.

2. Describe briefly the life-history and habits of an ordinary butterfly, the mason-wasp, or the common house-fly (*one only*).

3. State the chief uses of the following operations : Ploughing (spading), harrowing (raking), rolling.

Or,

How would you treat any *two* of the following crops after they have appeared above the ground, and explain the purpose of each operation : Parsnips, lettuce, peas, cabbage, broad beans, tomatoes, leeks, potatoes ?

4. State what you know about *one* of the following pests, and describe the measures you would take to remedy or prevent its ravages : Wireworm, horse bot-fly, turnip " fly."

Or,

State how the soil is improved by any *two* of the following : (a) Trenching, (b) draining, (c) applying stable manure, (d) sub-soiling, (e) applying sand or road-sweepings.

5. What effects have the following on the butter produced : Overripe cream, uneven salting, insufficient washing ?

Or,

What is the cause of milk becoming sour, and in what different ways may souring be prevented ?

6. If you had a box of metric weights and an untrue balance, how would you find the true weight of, say, your pocket-knife ?

Or,

A foot-rule, suspended by a string at the eight-inch mark, has a pound weight attached at the end of the shorter arm. Neglecting the weight of the rule, find what weight must be attached at the opposite end to cause the rule to assume a horizontal position. State the principle by which you found your answer.

7. Why should woollen clothing, and not linen or cotton clothing, be worn next the skin ?

Or,

Say how you would attend to any *one* of the following injuries, and explain the purpose of whatever you do : A scald, a sprain, severe bleeding from a vein.

8. Mention three unhealthy habits of children, and say why they are unhealthy.

Or,

Explain how you would do any *three* of the following : (a) Clean a window, (b) wash the floor of a schoolroom, (c) remove grease-stains from clothing, (d) clean a frying-pan, (e) clean a bright metal candlestick, (f) clean paint.

9. After being for some time in a room with a temperature of 60° F., I passed into another room with a temperature of 90° F., when the spectacles I wore were immediately dimmed. After a few minutes the dimness disappeared. Carefully explain this.

Or,

Explain fully and clearly how you would find the specific gravity of a stone.

10. You are required to "true up" a piece of kauri $14\frac{1}{2}$ in. long, $2\frac{1}{4}$ in. broad, and $1\frac{1}{8}$ in. thick to the dimensions 14 in. by 2 in. by 1 in. Name the tools you would use, and describe your method of working.

11. Explain how you would proceed to make either scones *or* pikelets, stating the quantities of the ingredients used, and the use of each.

Or,

Explain how you would make use of any *two* of the following:
(a) Sour milk, (b) pieces of stale bread, (c) the remains of a leg of mutton, (d) cold boiled potatoes, (e) beef-bones.

12. Describe fully the several stages in forging, to given dimensions, a hook and staple suitable for a gate-fastening. Use sketches to illustrate your answer.

13. Answer, giving reasons, any *three* of the following:—

- (a.) Whether a kettle intended to be heated in front of the fire should be bright or black.
- (b.) Why sunlight is necessary for plants.
- (c.) Why washing-soda should always be dissolved in boiling water before being put with clothes.
- (d.) Why a potato is regarded as a stem and not a root.
- (e.) Why a saw is "set."
- (f.) How you would join two pieces of metal with either hard or soft solder.
- (g.) Why a steamer made of iron floats on the sea.
- (h.) Why a nail in a piece of timber is more easily withdrawn with a carpenter's hammer than with a pair of pincers.
- (i.) Why a bicycle does not run steadily when it is travelling slowly.
- (j.) Why surgeons boil their instruments before they operate on a patient.
- (k.) Why milking-cows should be well fed during the winter.

No. 3.—HISTORY AND CIVICS.—*For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed: One hour. Four questions in all are to be answered, of which two are to be taken from Section A and two from Section B.

SECTION A.

1. Mention any occasions since the accession of the House of Hanover in which Britain has been at war (*a*) against France, and (*b*) with France as an ally. Select one occasion under each of these two headings and state briefly the circumstances.

Or,

Show why the possession of a powerful navy is so necessary for the safety of the Empire, and mention occasions in our history when the country has been saved from great danger by the fleet.

2. Give a brief account of the manner in which England and Ireland came under one Parliament. What do you know of any recent steps for the formation of separate Parliaments?
3. Write short notes on any *three* of the following: Peter the Hermit, the Cabots, John Howard, Sir John Franklin, Earl Roberts, Lord Strathcona, Sir Edward Grey.
4. Explain any *two* of the following: Divine right of kings; revival of learning; ship-money; plantation of Ulster; Lancashire cotton famine.

SECTION B.

5. You wish to form a cricket or hockey club in your school. Explain in detail how you would go about it.
6. What is meant by "town-planning," and what good may be expected to come from it? What can boys or girls do to assist in making their town attractive?
7. What do you understand by the terms "primary," "secondary," and "technical" education, and what facilities are provided by the State to enable you to take advantage of them?
8. What is a general election? What part will be played by each of the following at the coming election: Governor, Returning Officer, candidate, elector, scrutineer?
9. What do you know of the duties of a County, or City, or Borough Council, or of a Road Board? (Answer *one* only.) Who are entitled to vote for a candidate for one of these bodies?

No. 4.—HISTORY AND CIVICS.—*For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

Time allowed: One hour. Four questions in all are to be answered, of which two are to be taken from Section A and two from Section B.

SECTION A.

1. Name three important victories won (a) by Nelson, or (b) by Wellington, and state briefly the results which followed on each victory. (Answer (a) or (b), but not both.)
2. What were the causes of disagreement between—
 - (a.) John and the Barons ;
 - (b.) Charles I and Parliament ;
 - (c.) James II and the English people ;
 - (d.) England and France in 1756 ?

(Answer any one.)
3. Give some account of the part played by any *three* of the following men in the history of New Zealand : Marsden, Wakefield, Grey, Ballance, Seddon.
4. Who were, or who are, the following : Puritans, Jacobites, the Pilgrim Fathers, Chartists, Protectionists, Nationalists, Imperialists ? (Select any *four*.)
5. What inventions or discoveries are associated with any *five* of the following persons : Caxton, Harvey, Newton, Arkwright, George Stephenson, Davy, Lister, Rowland Hill, Speke, Edison, Stanley, Wilbur Wright ?

SECTION B.

6. What is the Cabinet ? Name four members of the present New Zealand Cabinet, and say what are the duties of each.
7. (a.) Who arranges for the lighting of the public streets ?
 (b.) What public bodies and officers have to deal with the management of a New Zealand public school ?
 (c.) Who is entitled to vote for a member of Parliament ?
 (d.) Who is entitled to vote for a Mayor ?
8. What is the Post Office Savings-bank, and of what use is it ? Explain its working.
9. What are the duties of any *three* of the following : Mayor of a city, Medical Inspector of Schools, Director of Physical Education, Health Officer, Crown Lands Ranger, Stock Inspector ?
10. To what dangers from outside attack is your country liable ? What steps has the country taken to guard against these dangers, and what are the duties of its citizens in the matter ?

No. 5.—ENGLISH.—*For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed : Two hours. All the questions are to be attempted

1. Write an essay of not less than twenty-five lines on one of the following subjects :—
 - (a.) The delights of the fireside.
 - (b.) The master of the sea is the master of the world.
 - (c.) Make hay while the sun shines.
 - (d.) The advantages of a good education.
2. Rewrite the following in the form of indirect speech :—

“ Women surely,” urged the Colonel, “ will be only an encumbrance.”

“ I think differently,” replied Alfred. “ Young and delicate as my cousins are they will not shrink any more than my mother when their services are required. They now can all of them use a rifle, if required. Depend upon it, if it comes to the necessity they will do so.”
3. Write a few lines on each of the following, setting out clearly the comparisons suggested :—
 - (a.) Weeds in a garden and faults in a person’s character.
 - (b.) Mountains and difficulties.
4. Break up the following into its different clauses and state clearly the function of each :—

Though much is taken much abides ; and though
 We have not now that strength which in old days
 Moved earth and heaven, what we are, we are.
5. Correct, with reasons :—
 - (a.) I prefer to go myself than to send a man like that.
 - (b.) I don’t go out in the rain without I am well wrapped up.
 - (c.) Having taken this resolution, my next care was to provide for my children.
 - (d.) Next year only eight vacancies will occur as against ten which have or will fall vacant in the present year.
6. Write a short paragraph on any matter you please, introducing not less than five of the following words in a suitable connexion :
enviable, envious, exorbitant, extravagant, eligible, illegible.
7. Select any three of the following, say who was the author in each case, and add one or two facts to show that you have some acquaintance with the book or poem in question : Lorna Doone, Lochinvar, Mill on the Floss, Christmas Carol, Evangeline, The Water Babies, Tom Brown’s School Days, Barnaby Rudge, Uncle Tom’s Cabin.

No. 6.—ENGLISH.—*For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

Time allowed: Two hours. All the questions are to be attempted.

1. Write an essay of not less than twenty lines on one of the following :—

- (a.) Dreams.
- (b.) A market-day.
- (c.) The advantages of travel.
- (d.) A country ramble in summer.

2. Punctuate carefully the following :—

a french nobleman who waited upon frederick the great of prussia was astonished to find the emperors portrait in every apartment of the palace and said to the king sire what is the reason of your honouring the portrait of your greatest enemy oh said the king the emperor is a busy enterprising young man and i find it necessary to keep my eye on him.

3. You have bought a camera and you like it. Write a letter to the firm who made it and say so, signing yourself “X.Y.Z.”

4. Break up the following sentence into its clauses and state the function and use of each :—

He who sits from day to day
Where the prisoned bird is hung,
Heedless of its loudest lay,
Hardly knows that it has sung.

5. Correct, with reasons :—

- (a.) I met a man to-day whom I had just heard was in Australia.
- (b.) These are the masters rules who must be obeyed.
- (c.) This course was universally approved by all of them.
- (d.) The unknown knight appeared the strongest of the two men.

6. Make single words to express the following, and put each in a separate sentence :—

- (a.) Not able to be destroyed.
- (b.) Able to be seen through.
- (c.) The art of cultivating a garden.
- (d.) Under the sea.

7. Rewrite the following, combining the sentences in any way that seems to you to be an improvement :—

Tommy was a smart boy. He was drawing pictures on a slate. His uncle asked what one of the drawings stood for.

Tommy said it represented an engine. The uncle said Tommy ought to draw some carriages. Tommy said, "The engine draws the carriages."

Show what changes you have made in combining the sentences.

Or,

Write a few lines about any *three* of the following: The lady with the lamp, Mr. Pickwick's servant, the Mad Hatter, Lilliput, Uncle Remus, Roderick Dhu, Sherwood Forest, the Arabian Nights, Aesop's Fables.

No. 7. — ARITHMETIC. — *For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed: One hour and three-quarters. Directions.—(1.) Only eight questions are to be attempted, and question 2 must be one of those chosen. (2.) All working must be set out in such a way that the whole of the processes can be followed without difficulty. Answers that do not work out evenly should be given correct to two places of decimals.

1. A shopkeeper marks his goods with a price from which he can deduct $12\frac{1}{2}$ per cent. for ready money and still have 20 per cent. profit. What is the marked price of an article which cost him £3 10s.?
2. In 1912 New Zealand exported 188,361,792 lb. of wool, valued at £7,105,482. Find (a) the average value per pound, and (b) the percentage the value of the wool was of the total value of New Zealand exports (£21,272,400).
3. An English sovereign contains 113 grains of pure gold; 15.432 grains make a gram, and a twenty-franc piece contains 5.8 grams of pure gold. Calculate from this the number of francs in £1.
4. By means of a diagram drawn to scale find the length of shadow cast by a flag-pole 40 ft. high, the sun's altitude being 60° . Then work a sum to find the height of a gum-tree the shadow of which at the same moment measures 68 ft.
5. A rectangular field is twice as long as it is broad, and it would cost £92 8s. to put a fence round it at 3s. 6d. per yard of fencing. Find the area of the field in acres.

6. Which is the better cow for a dairy-farmer, and by how much during the year : (a) A cow that yields 7,020 lb. of milk testing on an average 3.1, or (b) a cow that yields 6,540 lb. of milk the average test of which is 3.8 ? In both cases the price of butter-fat is 11d. per pound, and the cost of the cows' upkeep is not to be considered.
7. The following advertisement appeared in a newspaper : "Wanted to borrow for eight months £35. Am willing to pay back £40." Find what rate per cent. of interest the advertiser is willing to pay.
8. A housekeeper is faced with the following problem : Which is the cheaper, and by how much over the whole year—(a) to buy 1 ton of coal for 37s. 6d. cash, or (b) to buy another kind of coal, $\frac{1}{4}$ ton at a time for 11s. booked but with a discount of 6d. if paid by the 20th of the month ? The $\frac{1}{4}$ ton of (b) coal lasts 3 weeks and the ton of (a) coal lasts $9\frac{1}{2}$ weeks.
9. An instructor in agriculture recommends the following manures for stone-fruit trees : $1\frac{1}{4}$ lb. sulphate of ammonia, 3 lb. superphosphate, 1 lb. sulphate of potash. If there are eight plum-trees in the school orchard and 4 lb. of the mixed manures is required for each tree, how much of each manure should be bought ?
10. A strip of building-land on the side of a straight road runs back to a depth of 180 ft. ; it is sold at five guineas per foot of road frontage : what price is this per acre ?

No. 8.—ARITHMETIC.—*For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

Time allowed : One hour and three-quarters. Directions.—(1.) Answer question 1 and not more than seven other questions. (2.) Set out all the working clearly, so that all the processes can be followed without difficulty. Answers that do not work out evenly should be carried to two places of decimals.

1. In 1912 New Zealand exported 2,573,238 cwt. of frozen meat, valued at £3,909,569 : what was the value per pound ?
2. (a.) Show by dividing a line of suitable length that $\frac{2}{3}$ of $\frac{1}{16}$ of the line is just $\frac{1}{8}$ of the line.
(b.) Use decimals to simplify the following :—

$$\frac{8.08 - .756}{.0457} \times 2.04$$
3. A cistern is 10 ft. 6 in. long and 6 ft. 9 in. broad, and contains $3,248\frac{7}{16}$ gallons of water : what is the depth of water in the cistern ? (1 cubic foot of water contains approximately 6.25 gallons.)

4. A mass of ore weighing 3 tons 2 cwt. 2 qr. loses impurities during smelting to the extent of 14 cwt. 2 qr. 7 lb. Express the loss as a percentage of the weight of the ore, and calculate the value of the pure metal at £35 3s. 4d. per cwt., using the shortest method you can.
5. How many yards of plain paper 2 ft. wide would be required for the walls of a room 18 ft. 6 in. long, 14 ft. 9 in. wide, and 12 ft. high? Allow for a window 5 ft. by 5 ft. 6 in. and a door 7 ft. by 3 ft. 6 in.
6. When milk is sold in France at 40 centimes per litre, what is the equivalent price per pint in English money? 1 litre = 1,000 cubic centimeters, 1 pint = 568 cubic centimeters (approximately), and 100 centimes = 9½d.
7. A fertilizing spraying-mixture for fruit-trees is sometimes made up as follows: 50 lb. nitrate of soda, 7 lb. caustic potash, and 45 gallons of water. My spraying-can holds 3 gallons 5 pints: how much of each ingredient should I take to make one canful of mixture?
8. During the milking season a certain cow yielded 6,901 lb. of milk, the butter-fat from which realized £11 14s. 8d. at 11d. per pound. Calculate the average "test" (percentage of butter-fat).
9. A grocer buys a dozen 10 lb. boxes of tea for £9 7s. 6d. Find the grocer's gain per cent. if he sells the tea at 1s. 10½d. per pound.
10. Three clerks are engaged to type a manuscript of 150 pages. A takes 9 minutes to type a page, B takes 7½ minutes, and C takes 11¼ minutes. How long will they take to type the whole manuscript? How many pages will each clerk type?

No. 9.—GEOGRAPHY.—*For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed: One hour and a half. Directions.—Answer only six questions, three from each section. You must attempt question 10. Illustrate your answers by means of diagrams and rough sketch-maps wherever possible.

SECTION A.

1. It is frequently noticed that land along the banks of a river is higher than that of the neighbouring fields. How do you account for this?

2. A number of limestone caves occur in New Zealand. Describe an experiment which would help you to understand how these were formed, and state as clearly as you can the process of formation.
3. Where are geysers to be found in New Zealand? Can you give any explanation to account for their action?
4. Many of the harbours of New Zealand have at one time been river-valleys. Explain this statement by referring to any harbour you have seen and examined.
5. Explain clearly how a barometer may be used for determining the height of a mountain.
6. Draw a circle to represent the portion of the earth lighted up by the sun's rays on 21st December, and on this circle mark the Antarctic Circle, the Equator, and the South Pole.

SECTION B.

7. State the principal physical and climatic differences between the east and the west coasts of New Zealand. How are the industries and products affected thereby?
8. A message is cabled from England to New Zealand: describe one of the routes by which it may travel. If the message is despatched from England at noon on Friday (English time) and takes ninety minutes to reach New Zealand, at what time will it be received, taking the longitude of New Zealand as $172^{\circ} 30'$ east?
9. Where are, and what events of importance have lately occurred in, any *four* of the following: Adelie Land, Bosnia, Vera Cruz, Kiao-chau, Albania, Ulster, Tripoli, Vancouver?
10. On the blank map of the world supplied to you mark in any *one* of the following: (a) The passenger route between New Zealand and England via Vancouver, marking in half a dozen of the principal places thereon; or any *three* of the following: (b) The principal meat, wheat, coal, cotton, wool, and butter exporting districts.
11. Enumerate as many as possible of the different things the Government of New Zealand has done to make farming attractive and profitable.
12. A resident of Greymouth wishes to reach Auckland *quickly*, travelling overland as much as possible: state the route he would take and the approximate time spent on the journey.

No. 10.—GEOGRAPHY.—*For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

Time allowed: One hour and a half. Directions.—Answer only six questions, three from Section A and three from Section B. You must attempt question 11. Illustrate your answers by means of diagrams and rough sketch-maps wherever possible.

SECTION A.

1. Describe how changes of temperature help in bringing about the weathering of rocks. Mention other agents that assist in the process.
2. Name any portion of New Zealand that you have actually seen and that at one time was beneath the waters of the sea, and give as many reasons as possible for believing your statement to be correct.
3. Describe experiments that go to show why a river drops its load of sand and mud on reaching the sea.
4. Draw a diagram showing the portion of the earth illuminated by the sun's rays on 21st June, and on it mark the North Pole and the Equator. State the length of time the sun is above the horizon at the North Pole, and give a clear explanation of the statement.
5. What effect have the Southern Alps on the climate of the Canterbury Plains? Give reasons for your answer.
6. "A" is a place in long. 17° east, and "B" is another place in long. 19° west. If the time at "A" is 8.20 a.m., what is the time at "B"?

SECTION B.

7. Name *six* of the principal products of New Zealand. Name the districts in which each is produced, and the principal ports from which each is exported.
8. How would you account for the importance of any *five* of the following: Singapore, Sydney (N.S.W.), Glasgow, Antwerp, Moscow, Trieste, Pittsburg, Liège.
9. Name *five* of the principal kinds of scenery (not mere names of places) that attract tourists to New Zealand. In what other parts of the world can similar sights be seen?
10. A cargo-steamer trades between Australia and England. Name ten of the principal articles of commerce it will transport (a) *from* Australia, (b) *to* Australia.

No. 6—FREEHAND DRAWING—*continued.*

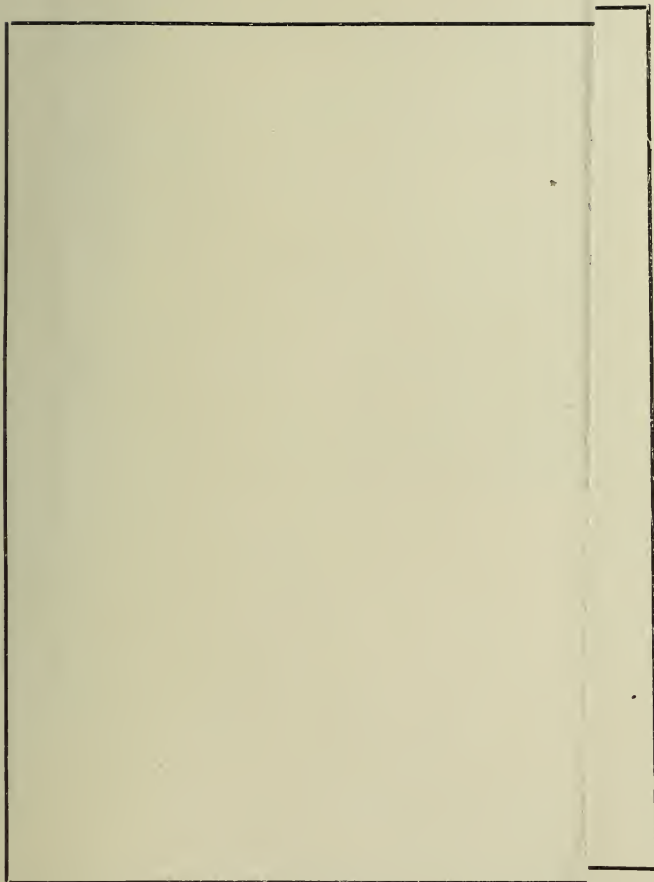


Diagram to Question 2.

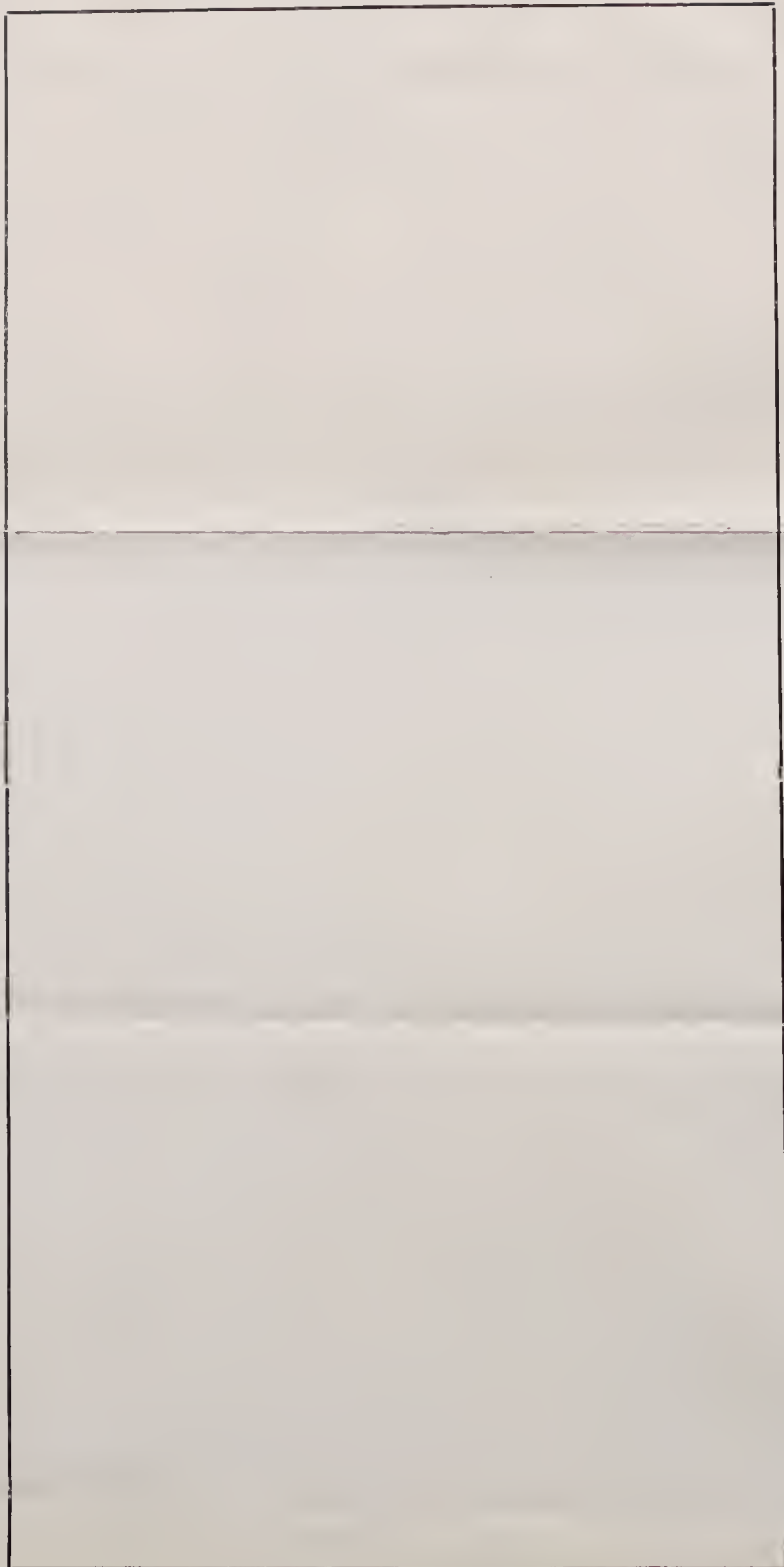
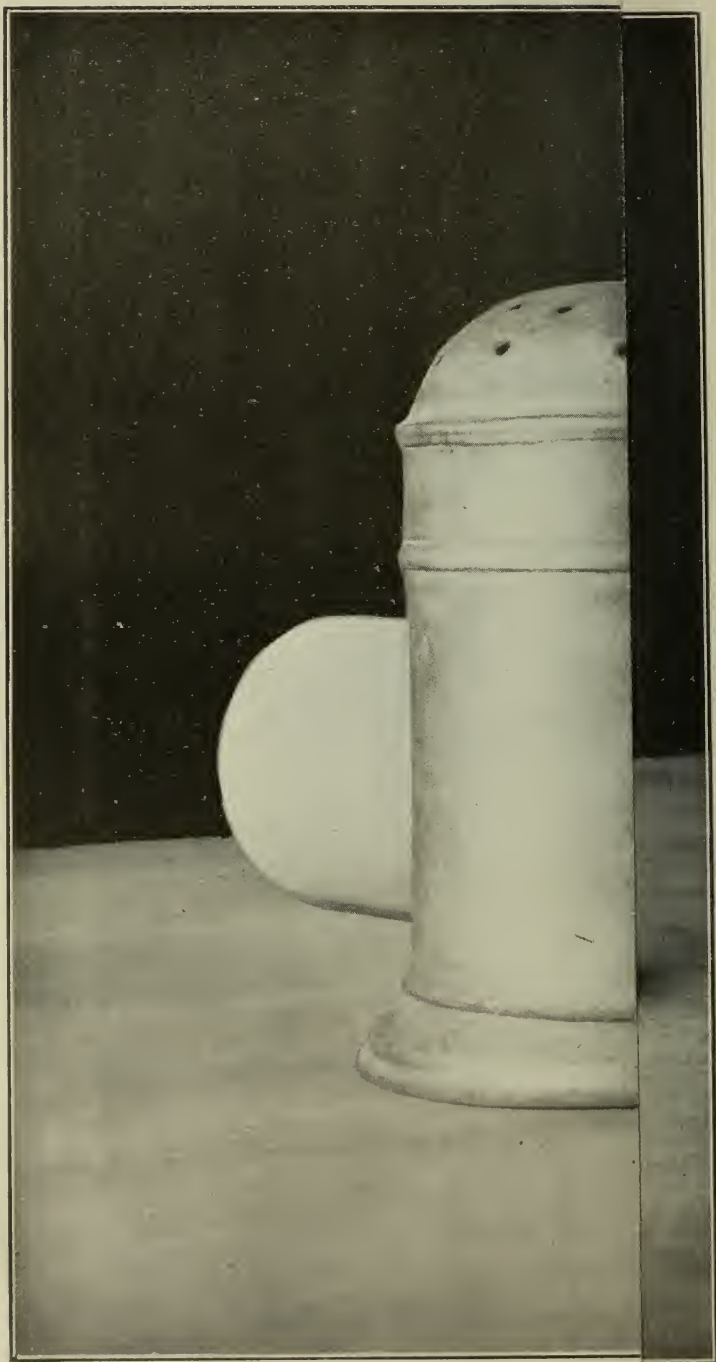


Diagram to Question 2.





11. On the accompanying map of the world mark in *one* of the following: (a) Three great transcontinental railways with three towns on each; or (b) the route from New Zealand to England via San Francisco with six of the principal places on the route.
 12. State approximately when any four of the following lived and with what feats their names are associated: Vasco di Gama, Marco Polo, Magellan, Cortes, Henry Hudson, Ferdinand de Lesseps, Sebastian Cabot, Jacques Cartier, Burke and Wills, Captain Scott.
-

No. 11.—DRAWING I.—FREEHAND DRAWING.—*Free Drawing with Pencil or Brush, including Elementary Design without Instruments.—For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed: One hour and a quarter.

1. Make a drawing, in outline only, of the flour-dredge and the rolling-pin shown in the diagram (see folder facing this page). Your drawing must be larger than the copy and must fairly fill the space on your drawing-paper.

First determine the space to be occupied by the group of objects, then the space to be filled by each object. Determine carefully the proportions of the principal parts of each object and their exact relation to each other and to the whole group. After sketching in the whole drawing, proceed to finish in clear outline as much of the drawing as time allows.

More marks will be given for correct proportions and arrangement than elaborate finish.

You may make measurements from the copy by holding the pencil or brush between the eye and the photograph, but in no other way.

No lines must be ruled.

2. Decorate the interior of the given space (see back of folder facing this page) with a simple design based upon any plant which you have studied. Name the plant. The design may be executed in pencil or brush, or both.

No. 12.—DRAWING I.—FREEHAND DRAWING.—*Free Drawing with Pencil or Brush, including Elementary Design without Instruments. —For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

Time allowed: One hour and a quarter.

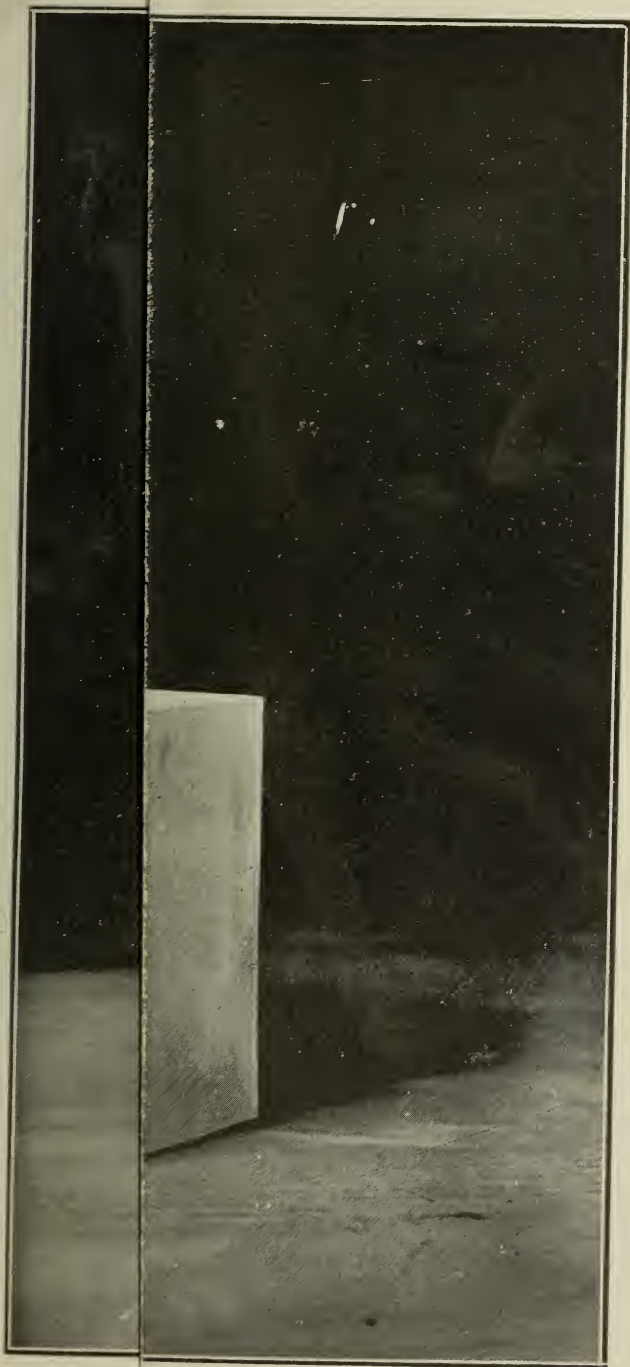
1. Make a drawing, in outline only, of the gloy-bottle and the cardboard cube shown in the diagram (see folder facing this page). Your drawing must be larger than the copy, and must fairly fill the space on your paper, and must represent only the objects themselves without border.

First determine the space to be occupied by the group of objects, then the space to be filled by each object in its relation to the other one. In making your drawing, determine carefully the proportion of the various parts of each object and their relation to one another and to the whole group. After sketching in the whole drawing, finish as much of it as time allows in bold, clear outline.

You may sketch in the outline of the label, but you need not show the lettering on it. More marks will be given for correct proportion and arrangement than for finish.

You may make measurements from the copy by holding the pencil or brush between the eye and the diagram, but in no other way. *No ruling is allowed.*

2. Decorate the interior of the given space (see back of folder facing this page) with a simple design based upon any plant with which you are familiar. The design may be executed in pencil or brush or both. Name the plant upon which your decoration has been based.





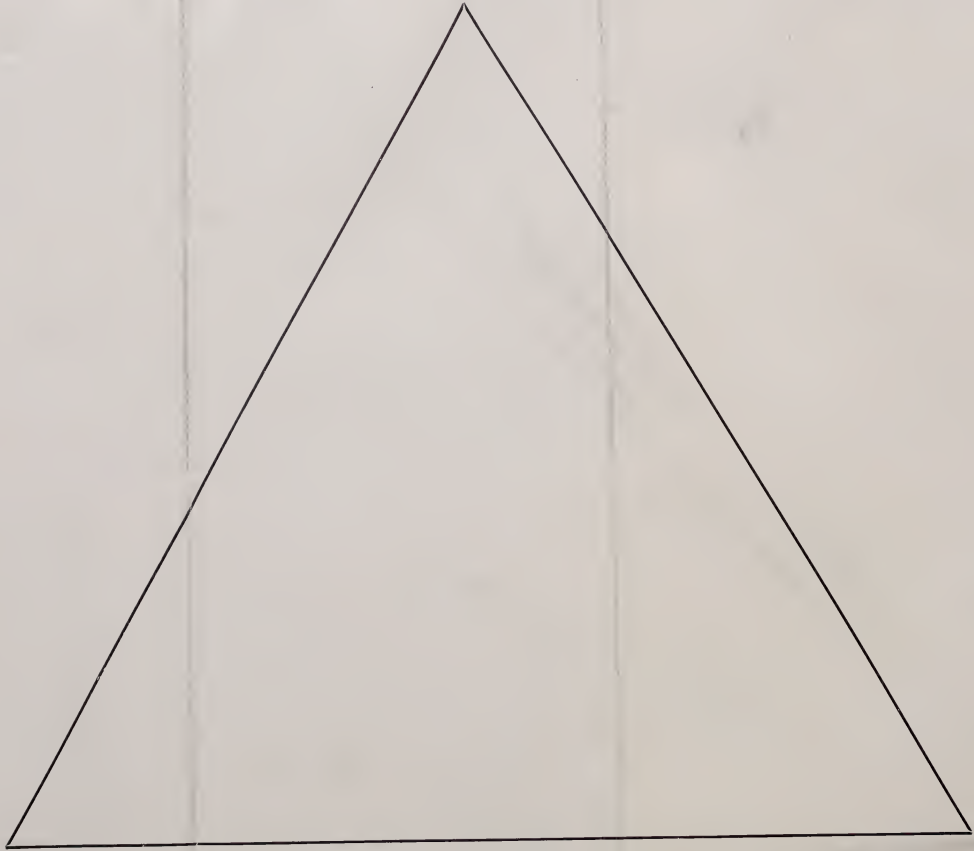
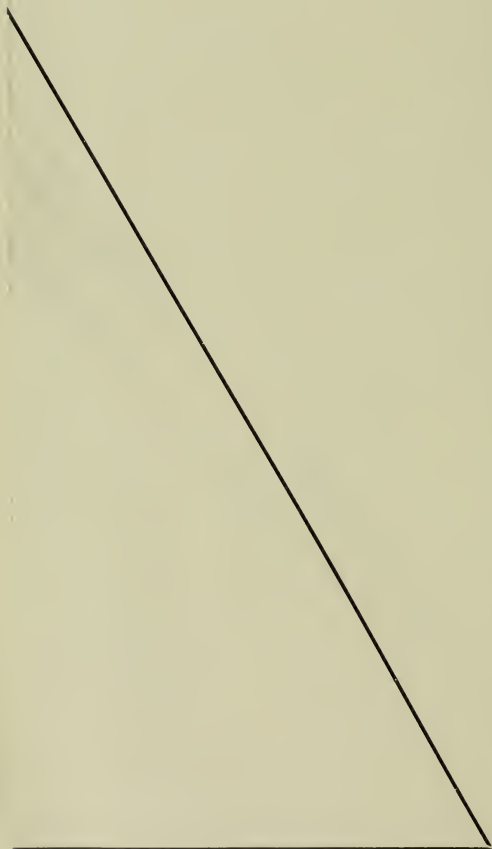


Diagram to Question 2.

med.



No. 13.—DRAWING II.—INSTRUMENTAL DRAWING.—*Drawing with Instruments, including Elementary Design with Instruments.—For Junior National Scholarships and for Education Board Junior Scholarships.*

Time allowed: One hour. Only four questions are to be attempted, one of which must be either No. 5 or No. 6. The diagram in question 5 may be transferred to your drawing-paper by pricking through.

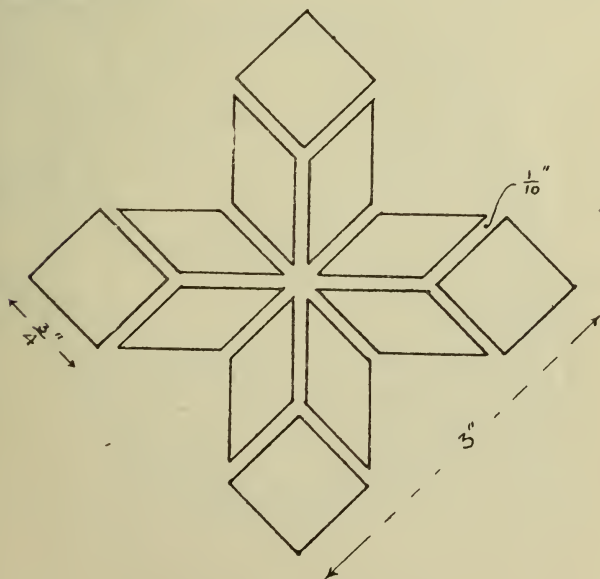
Caution.—No credit whatever will be given for solutions which appear to be the result of mere experiment. All lines of construction must be clearly shown. Put the number of the question before the answer.

1. The point A marks the position of a harbour-entrance, and B the position of a lighthouse on a rock 1 mile 2 furlongs due west of A. Draw a scale on which this and other distances in miles and furlongs, up to 4 miles, may be measured. The scale must be neatly finished, and properly figured and named.

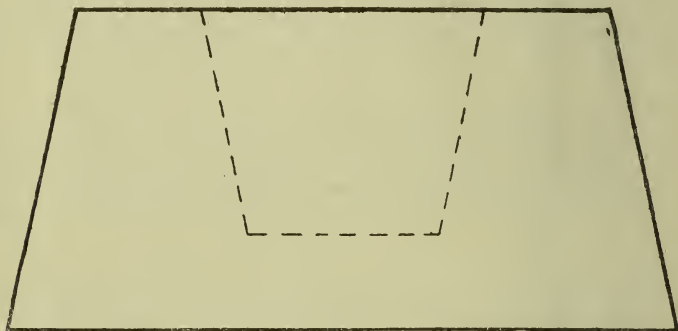
B

A

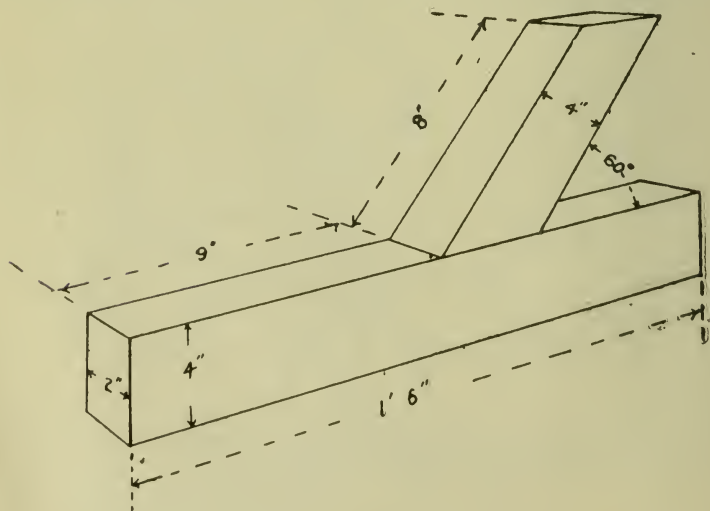
2. A ship sails from A (in question 1) in a straight line and anchors at a point M, 2 miles north-west of B. A second ship sails south-west from A and anchors at a point N due south of B. Using the scale of question 1, draw a plan showing the course of each ship. Mark on the plan the distance (to the nearest furlong) between the ships as they lie at their anchorages, and give the size of the angle M B N.
3. Make a careful drawing of the given figure, using the dimensions marked thereon.



4. The main lines in an ornamental steel ceiling form a series of squares, the side of each being 2 ft. Draw, with instruments, any suitable design for one of these squares. Scale, 2 in. = 1 ft.
5. The elevation is given of an inkstand consisting of a block of glass, the top and bottom of which are square in shape. The well for the ink is circular in section. Draw the plan.



6. A sketch is given of a joint formed of two pieces of 4 in. by 2 in. timber, the shorter piece being mortised into the longer at an angle of 60° . Draw the plan, front elevation and end elevation, using the dimensions given in the sketch. Scale, 3 in. = 1 ft.

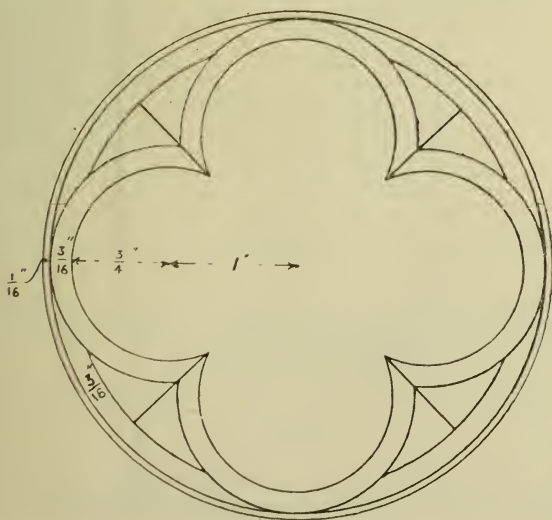


No. 14.—DRAWING II.—INSTRUMENTAL DRAWING.—*Drawing with Instruments, including Elementary Design with Instruments.—For Junior Free Places in Secondary Schools, District High Schools, and Technical Schools.*

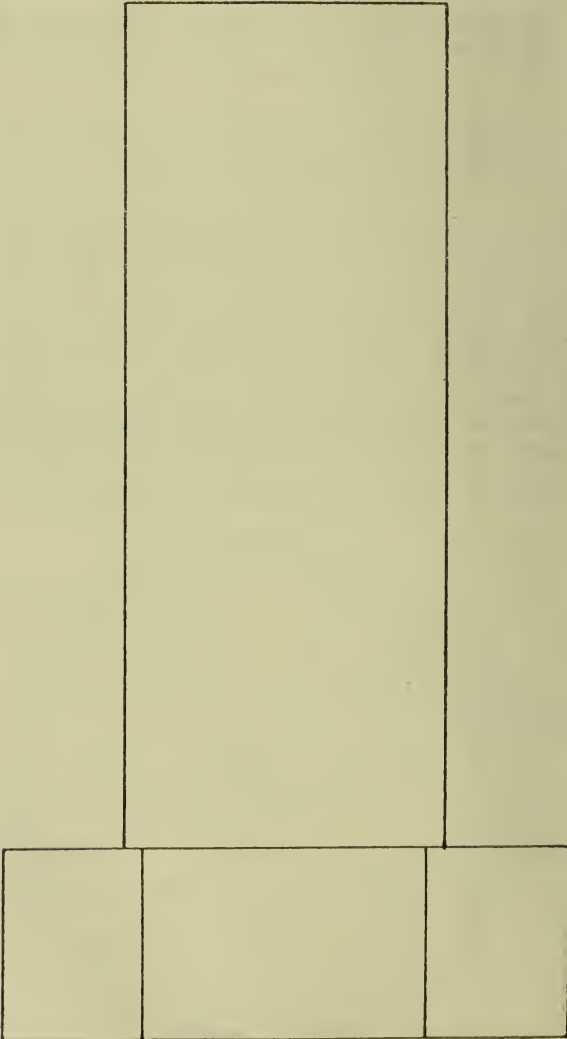
Time allowed: One hour. Only four questions are to be attempted, one of which must be either No. 5 or No. 6. The diagram in question 5 may be transferred to your drawing-paper by pricking through.

Caution.—No credit whatever will be given for solutions that appear to be the result of mere experiment. All lines of construction are to be shown. Put the number of the question before the answer.

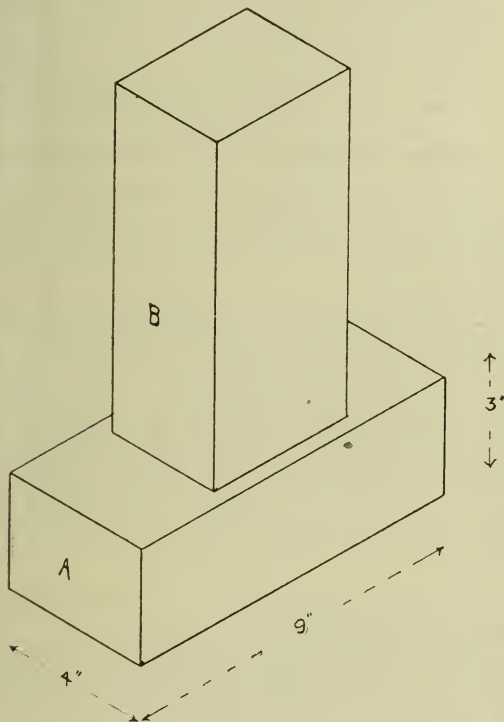
1. Draw a scale, on which 2 in. represents 1,000 yards, to measure distances from 50 to 3,000 yards. The scale must be neatly finished, and properly figured and named.
2. A B C D are four trees. B is 900 yards due east and C 1,500 yards due north of A. D is 800 yards south-west of C. A man starts from a point X, 2,500 yards due west of A, and advances towards A, keeping A and B in line. Arriving at a point Y, he finds he is also in line with D and C. From this point he turns off and advances directly towards D. Arriving at D, he turns due east again, and moves on until he reaches a point Z, on the straight line joining B and C. Using the scale of question 1, draw a diagram showing the position of the four trees, and the course taken by the man.
3. Copy the given figure, using the dimensions marked thereon.



4. Draw a vertical border 2 in. wide and decorate it with either interlocking rings or overlapping circles. You may introduce other ornamentation, but all your lines must be drawn by the aid of instruments. Not more than about 6 in. of the border need be shown.
5. The elevation is given of a round iron bolt with a hexagonal head. Draw the plan.



6. Two similar bricks are arranged as shown in the sketch, brick B being placed centrally on brick A, with its bottom edges parallel to the adjacent edges of brick A. Imagine the group of bricks turned so that the faces marked A and B are parallel to the vertical plane—*i.e.*, facing the spectator. Then draw the plan, front and side elevations of the group in the new position. Scale, $\frac{1}{4}$ in. = 1 in.



No. 15.—ENGLISH I.—*For Public Service Entrance and for Education Board Senior Scholarships.*

Time allowed: Two hours. Note.—You are expected to attempt every question.

1. Write out each clause in the following passage, name it, and state its grammatical relation with the rest of the passage. Each

clause must be written in full, and not indicated merely by quoting its first and its last words :—

She is not yet ; but he *whose* ear
Thrills to that finer atmosphere
Where footfalls of appointed things,
Reverberant of days *to be*,
Are heard in forecast echoings,
Like wave-beats from a viewless sea—
Hears in the voiceful tremors of the sky
Auroral heralds whispering, “She is *nigh*.”

—J. B. STEPHENS.—*The Dominion of Australia*
(*A Forecast, 1877*).

2. Parse as fully as you can the words italicized in the above passage.
3. Explain the exact meaning of the following words and phrases from the passage in question 1 : (a) is (line 1) ; (b) appointed things ; (c) reverberant ; (d) voiceful tremors ; (e) auroral heralds.

4. Turn the following passage into indirect speech, making no other changes than are necessary for this purpose :—

“My Lords,” said Eliot, “you see the man ! What have been his actions, what he is like, you know ! I shall leave him to your judgment. This only is conceived by us, the knights, citizens, and burgesses of the Commons House of Parliament : that by him came all our evils, in him we find the causes, and on him must be the remedies ! Ruin to him who designs the ruin of our whole State ! Let us crush him, ere he drags us all down.”

5. Rewrite the following passage in seven paragraphs, with the proper stops and capital letters :—

what are you in trouble about tell me of it said dick earnestly
darling i will share it with ee and help ee no no you cant nobody
can why not you dont deserve it whatever it is tell me dear
o it isnt what you think it is dreadful my own sin sin fanny as
if you could sin i know it cant be tis tis said the young lady
in a pretty little frenzy of sorrow i have done wrong nobody
will forgive me nobody you above all i have allowed myself
to to fl what not flirt he said

6. Rewrite the following faulty sentences in correct form, altering nothing but what is wrong :—

(a.) The situation among Great Britain and New Zealand
and all other colonies may be compared to a mother
and daughters.

(b.) The two girls, Elena and Elisaveta, were to have each
their own room in close proximity to the Duchess's.

Explain clearly in your own words the meaning of—

- (a.) The child is father to the man.
- (b.) The world knows nothing of its greatest men.
- (c.) A carpet knight.
- (d.) What do they know of England who only England know?

8. Select *one* of the following passages and point out some of the chief features of its style :—

- (a.) Small service is true service while it lasts ;
Of humblest friends, bright creature, scorn not one :
The daisy, by the shadow that it casts,
Protects the lingering dewdrop from the sun.
- (b.) Though fond of many acquaintances, I desire an intimacy only with a few. The Man in Black, whom I have often mentioned, is one whose friendship I could wish to acquire, because he possesses my esteem. His manners, it is true, are tintured with some strange inconsistencies; and he may be justly termed a humorist in a nation of humorists. Though he is generous even to profusion, he affects to be thought a prodigy of parsimony and prudence; though his conversation be replete with the most sordid and selfish maxims, his heart is dilated with the most unbounded love.

No. 16.—ENGLISH I.—INTERMEDIATE EXAMINATION.—*For Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed: Two hours.

1. (a.) Give a general analysis of the following, setting out the clauses and principal phrases of which it is composed, and showing their nature and relationship :—

Then a storm broke, and *that* with such violence *that* we thought it would have shattered the bare hills, for an infernal thunder crashed from one precipice to another, and there flashed, now *close* to us, now vividly but *far off*, in the thickness of the cloud, great useless and *blinding* glares of lightning, and hailstones of great size fell about us also, leaping from the bare rocks like marbles.

- (b.) Parse the italicized words in the foregoing passage.

2. Point out any errors in the following sentences, and rewrite the sentences in correct form. Alter nothing but what is wrong :—
- (a.) A person must be very near sighted if they cannot recognize an acquaintance ten feet off.
 - (b.) The colonists contended that they had no right to pay taxes.
 - (c.) She said she was that nervous she hardly knew what she was doing.
 - (d.) More than a century transpired before the country was revisited by civilized man.
 - (e.) He dropped his knife in his retreat against the wall which his rapid antagonist kicked under the table.
3. Write sentences introducing the following pairs of words and so frame them as to show clearly the difference in meaning : *ingenious, ingenuous ; observation, observance ; spirituous, spiritual ; experience, experiment.*
4. Pick out (a) five different prefixes, (b) five different suffixes, contained in the following passage, give the force of each, and state from what language it is derived :—

All the causes of war, the occasions upon which it is likely to arise, the time and the ostensible motives are gradually evolved, are examined, searched, valued, by publicists ; and by such means, in the further progress of men, a comprehensive law of nations will finally be accumulated, not such as now passes for international law (a worthless code that has no weight in the practice of nations, nor deserves any), but one which will exhaust the great body of cases under which wars have arisen during the Christian era, and will gradually collect a public opinion of Christendom upon the nature of each particular case.

5. Give in your own words the meaning of the following passage. Do not attempt an exact paraphrase :—

Seven weeks of sea, and twice seven days of storm
 Upon the huge Atlantic, and once more
 We ride into still water and the calm
 Of a sweet evening, screen'd by either shore
 Of Spain and Barbary. Our toils are o'er,
 Our exile is accomplish'd. Once again
 We look on Europe, mistress as of yore
 Of the fair earth and of the hearts of men.

Ay, this is the fair rock which Hercules
 And Goth and Moor bequeath'd us. At this door

England stands sentry. God ! to hear the shrill
 Sweet treble of her fifes upon the breeze,
 And at the summons of the rock gun's roar
 To see her red coats marching from the hill !

6. Rewrite the following passage, dividing it into paragraphs as it would appear in a book, and supplying the necessary capital letters and punctuation-marks :—

now isnt this better than being cooped up in a narrow constructed house said i ever so much better said euphemia now we know what nature is we are sitting right down in her lap and she is cuddling us up isnt that sky lovely oh i think this is perfectly splendid said she making a little dab at her face if it wasnt for the mosquitoes they are bad i said i thought my pipe would keep them off but it doesnt there must be plenty of them down at that creek down there exclaimed euphemia why there are thousands of them here i never saw anything like it theyre getting worse every minute ill tell you what we must do i exclaimed jumping up we must make a smudge whats that do you rub it on yourself asked euphemia anxiously no its only a great smoke come let us gather up dry leaves and make a smouldering fire of them.

No. 17.—ENGLISH II.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed : Two hours.

1. Write and punctuate the passage dictated by the Supervisor. (See No. 18.)

[You are required to use a separate book for this exercise. No marks will be given for a word that contains a doubtful letter. The letter "e" must be looped, the letter "i" must be dotted, and the letter "t" must be crossed.]

Give up your dictation-book to the Supervisor, and use a new book for the remainder of the paper.

2. [NOTE.—Candidates are to answer *one* only of the following.]
- (a.) Give a brief account of the life and achievements of General Wolfe and Lord Clive. (Or)
- (b.) How is India governed by England ? (Or)

(c.) State briefly what you know of—Edmund Burke; the Berlin Decrees; the Battle of the Nile; the Chartists; the Corn Laws. (Or)

(d.) What were the chief social reforms that marked the earlier part of the nineteenth century?

3. Answer *one* only of the following:—

(a.) What is meant by Imperial federation? What recent happenings may be said to have helped to bring it about? (Or)

(b.) What are the chief sources of the revenue of the New Zealand Government? (Or)

(c.) Show how State control is characteristic of our Dominion. In what directions might it be extended? (Or)

(d.) What is a Bill? How may it be introduced in Parliament? Describe the steps by which it becomes part of the law of this country.

4. Write an essay on *one* of the following subjects:—

(a.) “Reading maketh a full man.”

(b.) A sunset.

(c.) War at sea in Nelson’s day and now.

(d.) New Zealand fifty years hence.

(e.) Life on an island—its advantages and disadvantages.

No. 18.—DICTATION (PART OF THE SECOND PAPER IN ENGLISH).—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

The following passage for dictation is to be read aloud once; it is next to be dictated slowly to the candidates, and is afterwards to be read out again to afford opportunity for correction. In dictating the passage the Supervisor will group the words according to the divisions indicated, and will in general refrain from repeating them. The punctuation-marks are not to be given.

PASSAGE FOR DICTATION.

To lessen that disdain with which | scholars are inclined to look on the common business of the world, | and the unwillingness with which they condescend to learn | what is not to be found in any system of philosophy, | it may be necessary to consider | that, though

admiration is excited | by abstruse researches and remote discoveries, | yet pleasure is not given, nor affection conciliated, | but by softer accomplishments and qualities | more easily communicable to those about us. | He that can only converse upon questions | about which only a small part of mankind | has knowledge sufficient to make them curious, | must lose his days in unsocial silence | and live in the crowd of life without a companion. | He that can only be useful on great occasions | may die without exerting his abilities, | and stand a helpless spectator of a thousand vexations | which fret away happiness, | and which nothing is required to remove | but a little dexterity of conduct and readiness of expedients. | No degree of knowledge attainable by man | is able to set him above the want of hourly assistance | or to extinguish the desire of fond endearments | and tender officiousness; | and therefore no one | should think it unnecessary to learn those arts | by which friendship may be gained.

—*Samuel Johnson, The Rambler, No. 137.*

No. 19. — LATIN. — *For Public Service Entrance and for Education Board Senior Scholarships.*

Time allowed: Two hours and a half.

A.

Translate into English—

1. *Caesar lands in Britain.*

Quod ubi Caesar animum advertit, naves longas, quarum et species erat barbaris inusitatio, et motus ad usum expeditior, paulum removeri ab onerariis navibus, et remis incitari, et ad latus apertum hostium constitui, atque inde fundis, sagittis, tormentis, hostes propelli ac summoveri jussit: quae res magno usui nostris fuit. Nam, et navium figura, et remorum motu, et inusitato genere tormentorum permoti, barbari constiterunt, ac paulum modo pedem retulerunt. Atque nostris militibus cunctantibus, maxime propter altitudinem maris, qui decinae legionis aquilam ferebat, contestatus deos ut ea res legioni feliciter eveniret, “Desilite,” inquit, “Commilitones, nisi vultis aquilam hostibus proderè: ego certe meum reipublicae atque imperatori officium praestitero.” Hoc quum magna voce dixisset, ex navi se projecit, atque in hostes aquilam ferre coepit.

[*Funda*, —*ae*, a sling; *contestari*, to invoke; *consistere*, to halt; *pedem referre*, to retreat; *desilire*, to leap down.]

2.

Caesar returns to Gaul.

Obsidibus acceptis, exercitum reducit ad mare, naves invenit refectas. His deductis, quod et captivorum magnum numerum habebat, et nonnullae tempestate deperierant naves, duobus commeatibus exercitum reportare instituit. Ac sic accidit, ut ex tanto navium numero, tot navigationibus, neque hoc neque superiore anno, ulla omnino navis, quae milites portaret, desideraretur: at ex iis, quae inanes ex continenti ad eum remittebantur, militibus prioris commeatus expositis, perpaucae locum ceperunt: reliquae fere omnes reiectae sunt. Quas quum aliquamdiu Caesar frustra expectavisset, ne anni tempore a navigatione excluderetur, quod aequinoctium suberat, necessario angustius milites collocavit: summa tranquillitas consecuta est: inita vigilia secunda, naves solvit: prima luce terram attigit omnesque incolumes naves perduxit.

[*Deperire*, to be lost; *commeatus*, —us, a voyage; *desiderari*, to be missed; *locum capere*, to reach one's destination; *inanis*, —e, empty; *aliquamdiu*, for some time; *angustius*, more closely; *incolumis*, —e, safe; *navem solvere*, to set sail.]

B.

Translate into Latin—

1. Learning of the enemy's plans (use *abl. abs.*), Caesar led his army by forced marches into their territory.
2. Caesar sent letters and messengers to his allies, in order that they should not help the Helvetii with corn or anything else.
3. At dawn, the top of the mountain was seized by Labienus; Caesar, who was not more than a mile from the enemy's camp, had commanded Labienus not to engage in battle unless his own forces should have been seen close to the camp, so that an attack might be made on all sides at once.

[To engage in battle, *prælium committere*; on all sides, *undique*; a mile, *mille passus*.]

4. When the town was taken by storm, the Belgae begged that their lives might be spared.

[To spare the life of, *conservare*.]

C.

(These questions refer to the passages in A.)

1. Give the chief parts of the following verbs: *removeri*, *propelli*, *retulerunt*, *eveniret*, *vultis*.

2. Explain the mood in *eveniret, dixisset, portaret, desideraretur, excluderetur*.

Or,

Put into *Oratio Obliqua*: “Desilite,” inquit, “Commilitonēs, nisi vultis aquilam hostibus prodere: ego certe meum reipublicae atque imperatori officium praestitero.”

3. Answer in Latin the following questions on A 2, giving a complete sentence in each case:—

- (a.) Cur Caesar milites reportare com meatibus duobus instituit?
- (b.) Quot com meatibus tandem milites reportavit?
- (c.) Quomodo accidit ut perpaucae naves essent?
- (d.) Quae naves reiectae sunt?
- (e.) Quando Caesar terram attigit?

No. 20.—LATIN.—INTERMEDIATE EXAMINATION.—*For Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed: Two hours and a half.

A.

1. Translate into English—

Nunquam adhuc Romanae copiae in unum neque majores, neque melioribus ducibus convenerant, totum terrarum orbem facile subacturae, si contra barbaros ducerentur. Pugnatum tamen est ingenti contentione, victusque ad postremum Pompeius et castra ejus direpta sunt.

[*Orbis terrarum*, the world; *subigere*, to subdue; *ingens*, mighty.]

2. Translate into English—

Reperiebat etiam in quaerendo Caesar, cum paucis ante diebus equites adversum proelium gessissent, Dumnorigem atque ejus equites initium illius fugae fecisse: nam equitatu, quem auxilio Caesari Aedui miserant, Dumnorix praerat: eorum fuga reliquum esse equitatum perterritum.

[*Adversus*, unsuccessful; *praesse*, to be in command of.]

3. Translate into English—

De ejus adventu Helvetii certiores fiunt: et legatos ad eum nobilissimos civitatis mittunt: dicebant se velle voluntate ejus sine ullo maleficio iter per provinciam facere.

Caesar memoria tenet L. Cassium consulem occisum esse, ejus exercitumque ab Helvetiis pulsum esse: itaque concedendum esse non putabat. Si facultas per provinciam itineris faciendi daretur, non existimabat homines inimico animo temperaturos esse ab injuria et maleficio. Legatis respondit se diem ad deliberandum sumpturum esse.

[*Facultas*, opportunity; *temperare*, to refrain; *diem sumere*, to take a day.]

B.

1. Translate into Latin :—

(a.) Having hurled their spears, the soldiers made a charge.

(b.) Caesar led out his men in order to give the enemy an opportunity of engaging in battle (use *gerund*).

[To engage in battle, *praelium committere*.]

(c.) We have been informed that you wish to make peace.

(d.) The spy brought back word that the enemy's forces had crossed the river.

[Spy, *explorator*.]

(e.) The soldiers hastened into Gaul, but Caesar returned to Rome.

2. Answer the following questions on A 2, using a complete Latin sentence in each case :—

(a.) Qui praelium adversum gesserant?

(b.) Cui equitatus Dumnorix præerat?

(c.) Quid Caesar in quærendo reperiebat?

(d.) Quomodo equites reliqui perterriti sunt?

C.

(These questions refer to Section A.)

1. Give the chief parts of the verbs *convenerant*, *ducerentur*, *gessissent*, *fecisse*, *pulsum*.

2. Give the reason for the mood used in the following verbs: *ducerentur*, *gessissent*, *fecisse*, *sumpturum esse*.

Or,

Explain the case of the following words: *paucis diebus*, *fugæ*, *equitatus*, *auxilio*, *Caesari* (all in A 2).

3. Write in the speaker's own words (*oratio recta*):—

(a.) Se velle voluntate ejus sine ullo maleficio iter per provinciam facere.

(b.) Se diem ad deliberandum sumpturum esse.

No. 21.—FRENCH. *For Public Service Entrance and for Education Board Senior Scholarships.*

Time allowed : Two hours and a half. Only three questions (divisions) are to be attempted, of which question 1 must be one.

1. (a.) Translate into English—

C'était en Crimée, au printemps, dans la tranchée devant Sébastopol. Il pleuvait des bombes. Elles arrivaient en ronflant, surmontées d'un petit nuage de fumée. Dans une des tranchées les plus exposées au feu des Russes, la situation devenait intenable. Sentant ses hommes faiblir, un jeune officier français sortit de la tranchée et, debout sur le talus, s'exposa aux coups des Russes en criant aux soldats :

"Hardi ! mes enfants Montrons à l'ennemi que ses bombes ne nous font point de mal."

Au même instant un projectile tomba à dix mètres de l'officier et roula jusqu'à lui. Il ne broncha pas. Il arrêta du pied le boulet plein de poudre et de mitraille, puis, se courbant, le ramassa et visa, comme pour un jeu d'adresse, le manche d'une bêche plantée à vingt pas de la tranchée :

"Attention !" dit-il, "à moi la quille !"

Et vigoureusement il lança la bombe.

A peine s'échappait-elle de ses mains qu'elle éclata.

On le crut pulvérisé, mais il y a un dieu pour les braves : le vaillant officier était sain et sauf. Un éclat de mitraille avait renversé la bêche ; l'officier cria simplement :

"J'ai abattu la quille !"

[NOTE.—*Bêche*, spade ; *broncher*, to flinch ; *se courber*, to bend down ; *éclat*, fragment, bit ; *mitraille* (f.), grape-shot ; *quille*, skittle, ninepin (game of ninepins) ; *ronfler*, to snort ; *sain et sauf*, safe and sound ; *talus*, embankment ; *tranchée*, trench ; *viser*, to aim at.]

(b.) Répondez en français aux questions suivantes :—

- (i.) Qu'arrivait-il dans la tranchée devant Sébastopol ?
- (ii.) Que fit alors un jeune officier ?
- (iii.) Qu'est-ce qui tomba près de lui ?
- (iv.) Avait-il peur ? et pourquoi ?
- (v.) Quelle est votre opinion du jeune officier ?

2. (a.) Translate into English—

Paris est sous la neige cet hiver ; depuis quinze jours elle couvre les toits et encombre les rues. Plusieurs fois elle a paru vouloir fondre et le dégel a commencé dans la journée sous l'influence du vent d'ouest, mais le froid a repris le soir avec le vent du nord et de nouvelles couches de neige sont tombées.

Depuis qu'il gèle, les ruisseaux n'ont jamais franchement coulé; ils se sont parfois remplis d'une eau épaisse et il est presque impossible de les nettoyer. Dans les rues quelques tombereaux travaillent tous les jours à enlever la neige, mais si lentement qu'elle ne diminue guère. Les portes des boutiques sont fermées, et c'est seulement à travers un écran de ramages glacés, couvrant les vitres, qu'on voit les étalages des magasins.

D'ailleurs à quoi serviraient ces étalages? Personne ne prend le temps de s'arrêter. Sur les trottoirs les gens passent vite, et si l'on s'arrête quelquefois pour échanger un mot avec un ami, c'est pour soupirer après l'été, c'est une lamentation: "Quel temps! Quelle saison affreuse!"

[NOTE.—*Dégel*, thaw; *écran*, screen; *épais*, thick; *étalage*, window-display; *fondre*, to melt; *neige*, snow; *nettoyer*, to clean; *ramage*, branch; *ruisseau*, stream, gutter; *soupirer*, to sigh; *tombereau*, dust-cart; *vitre*, window, window-pane.]

(b.) (i.) *Enlever, appeler, nettoyer*: Comment on the irregularities in the conjugation of these verbs.

(ii.) What is the gender of nouns ending in *eau*? Give exceptions, if any.

(iii.) *Le soir*: What is the difference in meaning between *le soir* and *la soirée*? Make two sentences (and translate them) to illustrate your answer.

(iv.) *Si l'on s'arrête*: Why *l'on* instead of *on*?

(v.) Write in the singular—*De nouvelles couches de neige sont tombées. A quoi servent ces étalages?*

3. (a.) Translate into English:—

Il est nuit. La cabane est pauvre, mais bien close.
Le logis est plein d'ombre, et l'on sent quelque chose
Qui rayonne à travers ce crépuscule obscur.
Des filets de pêcheur sont accrochés au mur.
Au fond, dans l'encoignure où quelque humble vaisselle
Aux planches d'un bahut vaguement étincelle,
On distingue un grand lit aux longs rideaux tombants.
Tout près, un matelas s'étend sur de vieux bancs,
Et cinq petits enfants, nid d'âmes, y sommeillent.
La haute cheminée où quelques flammes veillent,
Rougit le plafond sombre, et, le front sur le lit.
Une femme à genoux prie, et songe, et pâlit.
C'est la mère. Elle est seule. Et dehors, blanc d'écume,
Au ciel, aux vents, aux rocs, à la nuit, à la brume,
Le sinistre océan jette son noir sanglot.

NOTE.—*Accrocher*, to hang up; *bahut*, trunk, chest, dresser; *brume*, fog, mist, haze; *crépuscule*, twilight, half-light; *écume*,

foam; *encoignure*, corner; *filet*, net; *matelas*, mattress; *plafond*, ceiling; *sanglot*, sob, moan; *vaisselle*, crockery; *veiller*, to be awake, to be still burning.]

- (b.) Give the past participle, the first person plural imperfect indicative, the first person singular conditional, and the third person singular imperfect subjunctive of *coudre*, *crut*, *devoir*, *dit*, *prie*. * (Arrange in four columns.)

4. *Either*—

- (a.) Write about twenty lines in French giving an account of the four seasons of the year.

Or,

- (b.) Translate into French—

The eagle and the owl, after having been long at war with one another, agreed to a peace, of which the most important article was that the first would not eat the little (ones) of the other. "Do you know them?" asked the owl. "No," replied the eagle, "but describe them to me, and when I see them I shall not touch them." "My little ones," replied the night-bird, "are dainty, beautiful, and well made; they have a soft, melodious voice, and they all resemble me. You will easily recognize them by these marks." "Very well, I shall not forget it." It happened one day that the eagle noticed some very ugly little birds in the corner of a rock. "These children," he said, "do not belong to our friend, so I am going to eat them." He immediately began to make a good dinner of them. The eagle was not wrong. They did not at all resemble the description the owl had given of his little ones.

[NOTE.—To agree to, *convenir de*; dainty, *mignon*; to describe, *décrire*; eagle, *aigle* (m.); to happen, *arriver*; owl, *hibou* (m.); peace, *paix* (f.); to recognize, *reconnaître*; ugly, *laide*; voice, *voix* (f.); to be at war, *faire la guerre*.]

No. 22.—FRENCH.—INTERMEDIATE EXAMINATION.—*For Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed: Two hours and a half. Only two of the questions 1, 2, 3 are to be attempted. You must attempt question 4.

1. (a.) Translate into English:—

Quand on sort de la jolie petite ville en se dirigeant du côté des montagnes où le soleil se couche, on suit d'abord

pendant plusieurs heures une grande route bordée de vignes, qui monte et descend avec les ondulations du sol comme la route d'un vaisseau sur une mer douce à larges lames. De nombreux villages, aux toits de tuiles rouges et aux murs blanchis à la chaux et tapissés de pampres au-dessus de la porte, s'élèvent au penchant de tous les coteaux et fument au fond de toutes les gorges. Des prés les entourent; les cours sinueux des petites rivières qui abreuvent ces prés sont tracés par des rangées de saules tondus tous les trois ans par la faux.

La vallée de Saint-Point n'est qu'une large fissure que les eaux de quelque déluge, ou les déchirures de quelques secousses du globe ont faite entre deux montagnes qui devaient jadis se toucher. Au milieu de la vallée se trouve un vieux château flanqué de deux tours. C'est là que j'habite depuis mon enfance, quand le flot de la vie me laisse ou me ramène à ce premier bord de mon existence laborieuse et agitée.—*Lamartine*.

[NOTE.—*Abreuver*, to water; *blanchis à la chaux*, white-washed; *colline* (f.), hill; *déchirure*, rent; *se diriger du côté de*, to go in the direction of; *faux*, scythe; *flot*, wave, tide; *jadis*, formerly; *lame*, wave, billow; *pampre*, vine-branch; *penchant*, slope; *saule*, willow; *secousse*, shock, convulsion; *tapisser*, to carpet, cover, deck; *toit*, roof; *tondre*, to shear, cut; *tour* (f.), tower; *tuile*, tile.

(b.) Translate into French—

- (i.) A road went up and down in the direction of the vine-covered hills.
- (ii.) In the valley there were many large villages surrounded by beautiful green meadows.
- (iii.) How long have you been living in Australia? For three months; but I hope to return to New Zealand next week.

(c.) *Un village aux toits de tuiles rouges*. When are adjective phrases formed with *à* and when with *de*? Illustrate your answer by translated examples.

2. (a.) Translate into English—

La chèvre entendit derrière elle un bruit de feuilles. Elle se retourna et aperçut dans l'ombre deux oreilles courtes, toutes droites, avec deux yeux qui reluisaient . . . C'était le loup.

Enorme, immobile, assis sur son train de derrière, il était là regardant la petite chèvre blanche et la dégustant par avance. La chèvre se sentit perdue. Elle se dit qu'il vaudrait peut-être mieux se laisser manger tout de suite; puis, s'étant ravisée, elle tomba en garde comme une brave chèvre qu'elle était. Alors le monstre s'avança, et les petites cornes entrèrent en danse.

Ah ! la brave chevrette, comme elle y allait de bon cœur ! Plus de dix fois elle força le loup à reculer pour reprendre haleine. Pendant ces trêves d'une minute, elle cueillait en hâte encore un brin de sa chère herbe ; puis elle retournait au combat, la bouche pleine . . . Cela dura toute la nuit.—*Alphonse Daudet.*

[NOTE.—*Brin*, blade (of grass) ; *chèvre*, goat ; *corne*, horn ; *cueillir*, to gather, pluck ; *déguster*, to taste, to enjoy ; *feuille*, leaf ; *haleine*, breath ; *loup*, wolf ; *ombre*, shade, darkness ; *oreille*, ear ; *se raviser*, to think better of it ; *reculer*, to move back ; *reluire*, to gleam ; *train de derrière*, haunches ; *trêve*, truce, rest ; *valoir mieux*, to be better.]

(b.) Répondez en français :—

- (i.) Faites une description du loup.
- (ii.) Pourquoi la chèvre se sentit-elle perdue ?
- (iii.) Que fit-elle alors ?
- (iv.) Croyez vous que le loup tue la chèvre ?
- (v.) Donnez une raison pour la réponse que vous avez faite à la dernière question.

(c.) Rewrite question 2 (a) in the first person singular, from “*La chèvre entendit*” down to “*par avance.*”

3. (a.) Translate into English—

Le Facteur.

Sur la route gelée et dure,
Où tremble de chaque côté
La sombre et farouche verdure
Des sapins au front attristé,
Le vieux facteur marche en silence
Frappant le sol de son bâton ;
Sur son épaule se balance
Le sac aux lettres du canton.
Dans ce grand sac en toile usée
Un curieux découvrirait,
Après l'enveloppe brisée,
Plus d'un mystérieux secret.
Tout près des beaux rêves de gloire,
Dont un ami s'enivrera,
Est un cachet de cire noire
Qu'une mère en pleurs ouvrira. —*A. Glatigny.*

[NOTE.—*Briser*, to break ; *cachet*, seal ; *canton*, district ; *cire*, sealing-wax ; *s'enivrer*, to be enraptured ; *épaule*, shoulder ; *facteur*, postman ; *farouche*, fierce, wild, austere ; *au front attristé*, mournful-looking ; *rêve*, dream ; *sapin*, fir-tree ; *toile*, linen cloth ; *usée*, well worn.]

- (b.) Give the present participle, past participle, first person singular of the present indicative, and the third person singular of the preterite of *va*, *devaient*, *vaudrait*, *cueillait*, and *ouvrira*, *gelée*, *se balance*. (Arrange in four columns.)
- (c.) *Vieux*. Give another masculine form for this adjective; **state**, giving an example, when this form is used. Give the **two** masculine forms of three other adjectives, with examples of their use.

4. *Either*—

- (a.) Write about twenty lines in French describing a walk in the country near your home.

Or,

- (b.) Translate into French—

An Arab had lost his way in the desert. For two days he had been wandering about without finding anything to eat, and he was in danger of dying of hunger. Suddenly he arrived near one of those pools where travellers water their camels, and there he saw a little leather bag which had fallen on the ground. "I believe it is dates or nuts," he exclaimed, picking it up, and feeling the weight of it. "What a delightful feast for me! How they will refresh me! I am delighted to have found them." Full of hope, he opened the bag; but, to his great regret, there were no dates or nuts in it. When he saw what it contained, he said to himself with an air of sadness, "Alas! I was mistaken; it is only pearls. If I do not find something to eat soon I must die."

[NOTE.—Camel, *chameau* (m.); to contain, *contenir*; date, *datte* (f.); to exclaim, *s'écrier*; feast, *regal* (m.); hope, *espoir* (m.); leather, *cuir* (m.); to lose one's way, *s'égarer*; to be mistaken, *se tromper*; to pick up, *ramasser*; pool, *mare* (f.); to refresh, *rafraichir*; to wander about, *errer ça et là*.]

No. 23. —GERMAN. —For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).

Time allowed: Two hours and a half.

1. Translate into English—

- (a.) Frau Müller, des alten Nachtwächters Frau, öffnete am Sylvesterabend um neun Uhr das Fenster und streckte

den Kopf in die Nacht hinaus. Der Schnee flog in stillen, grossen Flocken vom Fensterlicht gerötet, auf die Strassen nieder. Sie sah lange den frohen Menschen zu, die noch in den hellerleuchteten Läden Neujahrs-geschenke einkauften. Als ihr aber ein paar grosse, kalte Flocken die Nase belegten, zog sie den Kopf zurück, machte das Fenster zu, und sagte zu ihrem Manne: "Johann, bleibe zu Hause und lass den Philipp für dich gehen. Denn es schneit vom Himmel, wie es mag, und der Schnee tut, wie du weisst, deinen alten Beinen kein Gutes. Auf den Gassen wird es die ganze Nacht lebhaft sein. Es ist, als wäre in allen Häusern Tanz und Fest." Der alte Johann nickte mit dem Kopf und sagte: "Gretchen, ich lasse es mir wohl gefallen. Mein Barometer, die Schusswunde über dem Knie, hat mir's schon zwei Tage voraus gesagt, das Wetter werde ändern. Es ist Recht, dass der Sohn dem Vater den Dienst erleichtert, den er einmal von mir erbt.

[NOTE.—*Ändern*, to change; *Bein*, leg; *belegen*, to cover, to fall upon; *Dienst*, service, employment; *erben*, to inherit; *erleichtern*, to ease, to lighten; *froh*, glad, happy; *hellerleuchtet*, brightly lighted up; *Gasse*, street; *Laden*, shop; *lebhaft*, animated, lively; *Nachtwächter*, night-watchman; *röten*, to redden; *Schusswunde*, bullet-wound; *sich etwas wohl gefallen lassen*, to agree to something; *Sylvesterabend*, New Year's Eve.]

(b.) Antworten auf Deutsch—

Was tat Frau Müller am Sylvesterabend?
 Wie war das Wetter?
 Warum waren die Strassen lebhaft?
 Was sagte Frau Müller zu ihrem Manne?
 Liess er es sich gefallen?
 Weshalb?

2. Translate into English—

Mit langsamer Majestät schritt der Tiger durch das Tal und näherte sich dem Fusse des jenseitigen Berges, von dem Geschrei und Gebell der ihm nachgehenden Jäger und Hunde verfolgt. Aber das Tier schien das alles nicht zu achten, sondern ging ganz ruhig in einen Wald, den es auf seinem Wege fand. Hier hatte es sich niedergelegt, aber Steine neckten es auch hier so lange, bis sein Zorn in seiner ganzen Furchtbarkeit erwachte. Plötzlich ertönte aus dem Walde ein kurzes Gebrüll. Reissend brach der Tiger aus den Zweigen hervor und rannte in weiten, gewaltigen Sprüngen auf die Jäger zu. Immer mächtiger wurden seine

Sprünge, bis er schnaubend seine Pranken in die Brust eines Pferdes schlug. Inzwischen war ein Jäger nahe hinzugeritten; ein Schuss knallte,—mit zerschmettertem Kopf fiel das Tier zurück, und das Jubelgeschrei der Jäger begleitete seinen Fall.

[NOTE.—*Achten*, to esteem, to heed; *begleiten*, to accompany; *Berg* (m.), mountain; *erwachen*, to awake; *Furchtbarkeit*, fearsomeness; *inzwischen*, meanwhile; *Gebell* (n.), barking; *Gebrüll*, roar; *gewaltig*, powerful; *knallen*, to be fired, to ring out; *langsam*, slow; *necken*, to tease; *plötzlich*, suddenly; *Pranke* (f.), claw; *reissend*, swiftly, furiously; *scheinen*, to seem, to appear; *schlagen*, to strike, to dig; *schnaubend*, snorting, panting with rage; *schreiten*, to stride, to stalk; *sich nähern*, to approach; *Sprung* (m.), leap, bound; *Tier*, animal; *zerschmettert*, shattered; *Zorn*, anger.]

3. Decline throughout, singular and plural, *ein kleiner Wurm*, *das alte Bein*, *die ganze Nacht*; and, singular only, *kurzes Gebrüll*.
4. Give the infinitive, the first person singular of the imperfect indicative, and the past participle of *tut*, *weisst*, *springt*; and the third person singular of the present indicative of *zog*, *gefallen*, *niedergelegt*, *schlug*.
5. Give the comparative and the superlative (two forms) of *gross*, *froh*, *kalt*, *laut*, *lebhaft*, *kurz*.
6. Translate into English—

Der Apfel.

Ein schöner Apfel prangt auf einem Baum.
Ein Affe springt vorbei; er sieht ihn kaum,
Da reisst er ihn herab, man hört ihn schrein:
“Der Apfel da ist mein!”

Doch eh'er ihn noch bringt an seine Lippe,
Spaziert ein Mensch aus dem Gestrüppe;
Der sieht den Affen nach dem Apfel beissen,
Schnell weiss er ihm denselben zu entreissen,
Und laut hört man auch diesen schrein:
“Der Apfel da ist mein!”

Und wie er jetzt, vom Affen sehr beneidet
Den schönen Apfel in zwei Hälften schneidet,
Da sieht er ihn ganz ausgehöhlt von innen,
Und gar ein kleiner Wurm bewegt sich drinnen;
Der lispelt leise: “Schöpfungskönig, nein!

Der Apfel hier ist mein!” — *J. F. Castelli*.

[NOTE.—*Affe*, monkey; *ausgehöhlt*, hollowed out; *beissen*, to bite; *beneiden*, to envy; *gar*, quite; *Gestrüppe*, bushes; *kaum*, scarcely; *lispeln*, to whisper; *prangen*,

to make a brave show, to hang proudly ; *reissen*, to tear, to snatch ; *schneiden*, to cut ; *Schöpfungskönig*, King of Creation ; *sich bewegen*, to move about ; *vorbei*, past.]

7. *Either—*

- (a.) Write a letter in German (about twenty-five lines) inviting a friend to come and spend his (or her) next holidays with you ;

Or,

- (b.) Translate into German—

A magnificent tiger stalked through a beautiful valley at the foot of a high mountain. From afar he was followed by the hunters and their dogs. He came at last to a wood where the trees grew close together, and there he lay quietly down to rest. But the hunters found him and teased him with stones until he became angry and rushed out of the bushes with a loud roar. The animal sprang at his pursuers, knocking down two of them and digging his claws into one of the horses. Then the tiger made one mighty bound and tried to escape, terrified by the shouting and barking behind him. His leaps became bigger and bigger, and those who followed him thought they could not reach him. But in the meantime one of the pursuers rode quickly after the animal and shot him dead. His beautiful skin was afterwards much admired.

[NOTE. — Magnificent, *prachtvoll* ; from afar, *von Weitem* ; to grow, *wachsen* ; close, *dicht* ; together, *an einander* ; to rest, *ansruhen* ; pursuer, *Verfolger* (m.) ; to knock down, *niederwerfen* ; to try, *versuchen* ; to escape, *entkommen* ; terrified, *entsetzt* ; to reach, *erreichen* ; to shoot, *schiessen* ; skin, *Haut* (f.) ; to admire, *bewundern*.

No. 24. —MAORI. *For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed : Two hours and a half. All the questions should be attempted.

1. Translate the following sentences into English :—

(a.) Kia hohoro ta tatou haere.

(b.) Ko taua e haere.

- (c.) Mau e pikau enei mea.
- (d.) He aha te utu o enei taonga.
- (e.) I mate taku tuakana i te tau kotahi mano, e waru rau e iwa tekau ma iwa.
- (f.) Ko ta raua tamaiti tena e oma na.
- (g.) Na wai ena kuri?
- (h.) Tera ano taua e tutaki apopo.
- (i.) E koa ana ahau mo taku kitenga i a koe.

2. Translate the following sentences into Maori:—

- (a.) Give her some food.
- (b.) John's canoe is the largest.
- (c.) What is the price of that horse?
- (d.) Tupoki bought one hundred and twenty-seven bags of potatoes.
- (e.) I have recovered through your medicine.
- (f.) Do not go to his house to-morrow.
- (g.) That is not Hori's canoe.
- (h.) He took the best horses.
- (i.) John is the fourth son of Pitama.

3. Correct the following sentences, and give reasons for the corrections:—

- (a.) E toru nga tamaiti a Hone i mate.
- (b.) I patungia e ia taku pango kuri.
- (c.) Kowai te ingoa o enei mea?
- (d.) Kua hinga nga rakau roa i te hau.
- (e.) I haere mai maua ko nga wahine inanahi.

4. Translate into Maori:—

The Aotea canoe was one of the vessels in which the ancestors of the Maoris came to New Zealand. The chief was Turi. He left his home in Hawaiki owing to a quarrel with a great Ariki named Uenuku. Uenuku killed a son of Turi's named Hawe Potiki. Uenuku warned his own son not to go near Turi's settlement. Turi told the boys of his village to play games in order to attract Hawe Potiki to their end of the village. Hawe Potiki was very careful and did not come. Then the children played on a *swing* by a stream. It was then summer and very warm. Hawe Potiki could not curb

his desire to come to the swing. He came, and Turi killed him in the stream. When Uenuku heard of his son's death he became very angry. A battle was fought at Awarua. Uenuku's army was defeated, and the younger brother of Uenuku was slain by Kewa. Uenuku then thought to kill Turi's people by witchcraft. But Turi's wife Rongorongo heard Uenuku's *incantations* and informed her husband. When Turi heard, he knew they would all perish if they remained. He went to Toto and asked him for a canoe. Toto gave him the Aotea canoe, and in payment Turi gave a dogskin cloak. On this canoe Turi, with his wife, his children, and his tribe, crossed the great ocean to this island, which he called Aotea-roa. He settled in Taranaki near Patea, and the tribes of Taranaki are his descendants.

Swing, *morere*.

Incantations, *karakia*.

5. Translate the following passage into English :—

Ko Kapene Kuki te pakeha tuatahi nana i kite a Niu Tireni. Ko te tau i u mai ai tona kaupuke ko te tau 1769. Ko nga ingoa o nga tino motu o Niu Tireni, ko Aotea-roa tetahi, ko Te Waipounamu tetahi. Ko te kawana tuatahi o enei motu ko Kapene Hopetana. Nana i *whakairi* te kara o Ingarangi ki Pe-Whairangi i te tau kotahi mano, e waru rau e wha tekau. Ko te tau tenei i hainatia ai e nga rangatira Maori te Tiriti o Waitangi.

I noho nga kawana ki Akarana taea noatia te tau kotahi mano, e waru rau e ono tekau ma waru. No muri mai ka noho ratou ki Poneke. Ko te tino hiahia o te kawanatanga o mua iho, kia ora tonu nga Maori hei iwi ki te ao nei. Ko te iwi Maori he iwi toa, he iwi whakaaro nui ki te hapai i to ratou ingoa. He maha nga tikanga tawhito a te Maori kua ngaro haere i naiane. E ngakau nui ana te Maori i naiane kia akona a ratou tamariki ki te reo Pakeha. E mohio ana hoki ratou ko te matauranga o te Pakeha te mea nui. Ma te mohio o nga tamariki e whai oranga ai ratou a nga takiwa e takoto ake nei.

Tetahi mea nui e ora ai te Maori ma te ahu whenua. He nui nga whenua Maori kua hokona e ratou ki te Pakeha. Engari tera ano etahi whenua e toe ana kia ratou. Mehemea ka tahuri ratou ki te whakamahi i aua whenua he nui nga painga e puta ki te iwi Maori. No reira he mea tika kia haere nga tamariki Maori ki te ako i te mahi ahu whenua. He mea tika hoki kia awhinatia e te Kawanatanga tenei take.

Whakairi, *to hoist*.

No. 25.—ARITHMETIC.—*For Public Service Entrance and for Education Board Senior Scholarships.*

Time allowed : Two hours.

1. (a.) The distance of the horizon from an observation station is found approximately from the formula : distance in miles = $\sqrt{\frac{3}{2}h}$ where h is the height of the station in feet. Find, in miles correct to two places of decimals, the distance of the horizon from the top of Mount Cook, 12,349 ft.
- (b.) Without testing by the extraction of the roots, how are we able to say that 59,068 is not an exact square, and that 546,700 is not an exact cube ?
2. A rectangular tank 14 ft. long by 10 ft. wide is to be constructed to hold $31\frac{1}{4}$ tons of water : find its depth. (Given 1 cub. ft. water = 1,000 oz.)
3. Two men rent an area of grazing-land for £40. The first pays £25 of this sum, and puts in $2\frac{1}{2}$ times as many cows as the other. If the latter uses the land for 4 months, how long ought the first to use it ?
4. A spherical balloon 30 ft. in diameter is filled with a gas 0.4 times as heavy as air, the weight of the empty balloon being $1\frac{1}{2}$ cwt., and a pound of air having a volume of 13.14 cub. ft. The lifting-capacity equals the difference between the weight of the displaced air and the total weight of the inflated balloon. Find in pounds to the nearest pound the lifting-capacity of the balloon when fully inflated.
5. From the terminal stations on a line of railway two trains start at the same time and travel towards each other at 30 and 40 miles an hour respectively. When they cross, one has travelled $22\frac{1}{4}$ miles more than the other. What is the distance between the terminal stations ?
6. A field of 45 acres is reaped by 9 men in 4 days of 8 hours each, and one of 35 acres by 8 men in $3\frac{1}{2}$ days of 7 hours each. Compare the average efficiency of a workman of each set. If the latter be paid 9s. a day each, what should the former be paid ?
7. A tradesman saves each year an amount equal to 20 per cent. of his capital, and adds it to his capital at the end of the year. If on the 1st January, 1910, the capital was £500, what was it on the 1st January, 1914 ?
8. A bankrupt has property estimated to be worth £975, which if realized in full would have given his creditors 16s. 3d. in the pound. But three-fifths of the property sold at 17.5 per cent. and the remainder at 23.75 per cent. below estimated value. What sum did the property bring, and what dividend was paid ?

No. 26.—ARITHMETIC.—INTERMEDIATE EXAMINATION.—*For Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed : Two hours.

1. Find to the nearest penny the value of 40 tons 2 cwt. 12 lb. at £17 5s. 7d. a ton. (Use the shortest method you can.)
 2. Two steamers start from London simultaneously for the same foreign port 1,265 miles distant. The faster steams at an average rate of 15 miles an hour, and arrives at her destination 10·2 hours before the other. Find the average rate of steaming of the latter in miles per hour correct to two decimal places.
 3. What is the thickness, expressed in inches correct to three decimal places, of sheet lead at 70 lb. to the square yard? (Given that 1 cub. ft. of water weighs 1,000 oz., and that lead is 11·4 times as heavy as water.)
 4. A man invests the whole of his capital in four successive ventures. In the first he clears 100 per cent., but in each of the others he loses 20 per cent. By how much per cent. has he lost or gained?
 5. Find by the shortest method, correct to the nearest 'penny, the interest on £256 5s. from the 1st July to the 9th October at $5\frac{1}{2}$ per cent. per annum.
 6. In an election contest between two candidates the successful candidate polled three-fifths of the electors on the roll, and had a majority of 756 over his rival. If one-ninth of the constituency failed to vote, find the number that voted for each candidate, and the gross number of electors on the roll.
 7. Lace can be purchased in France at 7·63 francs per meter. Duty, freight, and trade profit raise the cost in England by 65 per cent. Find to the nearest farthing the cost of the lace per yard in England. (Take 1 meter as 39·4 inches, and 1 franc as 9·5 pence.)
 8. What capital invested in 5-per-cent. stock at par will bring a net annual income of £534 after payment of income-tax at 6d. in the pound on the excess of income over £300 (no income-tax being payable on the first £300 of a man's income)?
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No. 27.— ELEMENTARY MATHEMATICS. *For Public Service Entrance and for Education Board Senior Scholarships.*

Time allowed: Three hours. You may attempt all the questions. No sheets of graph-paper are to be used except those provided by the Supervisor. In practical questions all lines required in the construction are to be shown clearly, and the figures should be drawn accurately. Marks will be given for all intelligent work, even if incomplete, and also for neatness.

1. Prove that if two angles of a triangle are equal to one another, then the sides which are opposite to the equal angles are equal to one another.
2. On the sides of a triangle ABC as bases three equilateral triangles BCP, CAQ, ABR are described, all outside the triangle ABC. Prove that AP, BQ, CR are all equal.
3. (a.) Draw a triangle ABC in which the angles at B and C are 71° and 43° respectively, and BC is 4 in. long. Bisect the angles ABC, ACB, letting the bisectors meet at M. Join MA, and measure the angles MAB, MAC. What geometrical fact is illustrated ?
(b.) Prove that if the angle BAC contains a degrees, the angle BMC contains $(90 + \frac{a}{2})$ degrees.
4. Show how to draw a perpendicular at one extremity of a given straight line without producing the line. *Do not use a set-square or a protractor.* Prove that your construction is correct.
5. PQRS is a parallelogram, and T, V are taken in PQ, RS respectively so that $PT = RV$. PV, TS meet in X; QV, TR meet in U. Show that TUVX is a parallelogram.
6. Construct a parallelogram ABCD, given that the angle A is 50° , the perpendicular distance between AB and DC is 3.5 centimeters, and the length of the diagonal BD is 6 centimeters. State the steps of the construction.

Or,

On squared paper plot the points P, Q, R whose co-ordinates are (4, 15), (−3, 5), (−13, 2) respectively. Let PA, QB, RC be the perpendiculars from P, Q, R on the x -axis, and join PQ, QR, RP. Calculate the areas of the trapeziums PABQ, QBCR, RCAP, and hence that of the triangle PQR.

7. If $a = 3$, $b = -2$, $c = -5$, find the value of—

$$\frac{a-b}{c} - \frac{b^3}{a+c} - (a+b)(b-c).$$

8. Find the highest common factor and the lowest common multiple of $18a^4b - 144ab^4$, $15a^5 - 240ab^4$, and $108a^5 - 144a^4b - 144a^3b^2$.
9. Simplify $\frac{1}{30 - 34x + 8x^2} - \frac{1}{5 + 6x - 8x^2} - \frac{5 + 12x}{6 + 10x - 4x^2}$
10. Solve the equations—
- (i.) $(6x - 5) \left(\frac{x}{3} - 1 \right) = (2x + 3) \left(x - \frac{1}{5} \right)$.
- (ii.) $3x^2 - 5x - 6 = 0$.
- In (ii) use the method of “completing the square,” and give the results correct to two decimal places.
11. A lady shopping thinks of buying 7 yards of a certain material, but discovers that by paying only $7\frac{1}{2}$ d. more in all she can get 9 yards of another material, of which the price per yard is $5\frac{1}{2}$ d. less than that of the former. Find the two prices per yard.
12. An oblong court, whose length is twice its breadth, consists of a grass-lawn with a path 3 ft. wide all round it. The cost of paving the path, at 5d. a square foot, is exactly equal to the cost of turfing the lawn at 4d. a square foot. Find the total cost.

No. 28.—ELEMENTARY MATHEMATICS.—INTERMEDIATE EXAMINATION.—*For Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed: Three hours. You may attempt all the questions. In practical questions all lines required in the construction are to be shown clearly, and the figures should be drawn accurately. Marks will be given for all intelligent work, even if incomplete, and also for neatness.

1. Using only compasses and ruler, construct a triangle with sides $AB = 5$ cm., $BC = 4$ cm., and the angle $B = 67\frac{1}{2}^\circ$; and find by measurement the length of the side AC , and also from measurements of your figure find the area of the triangle.

2. A straight road runs along a field in which are two trees, A and B, A being due north of B. If the road runs north-east and A is distant from it 15 chains, and B 10 chains, find graphically how far A and B are apart, and test your answer by calculation.

3. How would you show experimentally and as accurately as possible that the circumference of a circle is approximately $\frac{22}{7}$ times the diameter?

4. Prove that the opposite sides and angles of a parallelogram are equal, and that the diagonal bisects the parallelogram.

If in a quadrilateral the two diagonals bisect each other, show that the figure is a parallelogram.

5. Prove that the shortest distance from a point to a straight line is the perpendicular drawn from the point to the line.

6. What is a locus? Find, by plotting a number of points on squared paper, the locus of a point which moves so that the perpendicular distance from one line is half of that from a line at right angles to it.

Or,

Granting that 100 kilometers are equal to 62.5 miles, construct with squared paper a graph which will enable you to convert a measurement in kilometers into one of miles, and use it to find the value in miles of 72 kilometers.

7. A boy starts out from home with £ a in his pocket, he spends b shillings, loses c half-crowns, and earns two florins; at the end of the day he divides the remainder equally among x companions: how much does each receive?

8. Divide $\frac{x^4}{2} + \frac{x^3}{2} - \frac{14x^2}{3} + 10x - 8$ by $\frac{3x^2}{2} - 3x + 4$.

9. Simplify $\frac{2}{x^2 - y^2} + \frac{1}{\frac{2}{3}(x + y)^2} - \frac{1}{\frac{2}{3}(x - y)^2}$

10. Solve the equations—

$$(i.) \quad 2.4x - \frac{.16x - .08}{.4} = 3.5x + 7.9.$$

$$(ii.) \quad 2x^2 + 5x - 12 = 0.$$

11. One pound of tea and two pounds of sugar cost two shillings; if, however, the price of tea rises till it is half as much again, and that of sugar falls till it is two-thirds of the price it was previously, the total cost of the pound of tea and two pounds of sugar would rise by sevenpence. Find the original price of the tea and sugar per pound.

No. 29.—ELEMENTARY PHYSICAL SCIENCE I.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed : One hour and a half. Not more than five questions are to be attempted. Illustrate your answers by labelled diagrams wherever possible.

1. On the graph-paper supplied describe a circle of 2 in. radius. Draw any diameter A B. With A as centre and with same radius describe an arc cutting the circumference in C. Join A C, C B. Measure the length of C B to the nearest millimeter. By counting squares find in square inches the area of the segment contained by C B and the part of the circumference it cuts off, also of the triangle A C B. Verify the last result by some other method of determination.
2. Describe carefully how you would proceed to weigh a body on a balance. What tests for accuracy and what adjustments should first be made? Explain how a balance may be used to give accurate results although its arms are of unequal length.
3. You are given a vessel containing a mixture of water, sand, and salt. Explain carefully how you would proceed to obtain a separate sample of each of the ingredients.
4. What experiments have you performed to prove the truth of the statement that the upward pressure of a liquid on a body immersed in it is equal to the weight of water displaced? The weight of a piece of marble when weighed in air is 90 grams: its apparent weight when suspended in water is 52.5 grams, when suspended in kerosene 59.5 grams: find the specific gravity of the marble and of kerosene.
5. It has been found by experiment that a stone falling freely from rest falls 4 ft. in $\frac{1}{2}$ sec., 16 ft. in 1 sec., 36 ft. in $1\frac{1}{2}$ secs., 64 ft. in 2 secs., 144 ft. in 3 secs. Represent these facts by a graph on squared paper, and from it read off (a) the distance fallen in the third second, (b) the distance fallen in 1.75 seconds, (c) the time taken to fall 80 ft.
6. Describe experiments you would perform to prove the rule for finding the resultant of two like parallel forces if you were supplied with a spring balance, a half-meter rule, sets of weights, and thread. A uniform rod 40 in. long is suspended from its middle point by a piece of thread. A weight of 25 grams is hung from one end of the rod and a weight of 30 grams from a point 8 in. from the other end. Where must a weight of

10 grams be suspended so that the rod will hang in a horizontal position? What then is the tension of the supporting thread if the rod weighs 15 grams?

7. Explain the principle of the inclined plane. A loaded truck weighing in all $8\frac{2}{3}$ cwt. is hauled up a steep incline by a horse attached to a rope which passes over a pulley fixed to a post at the top of the incline. The slope of the incline is such that the truck moves 13 ft. up the incline while it rises 5 ft. vertically. If all friction be neglected, what is the least pull the horse must exert to move the truck? How could you fix the pulley so as nearly to double the horse's power?
 8. Describe carefully how you would make a simple mercurial barometer. How would you determine whether there was any air in the tube above the mercury? Explain the effect of holding the tube at an angle to the vertical. Calculate the height of the water-barometer when the mercury-barometer stands at 29 in. (Specific gravity of mercury = 13.6.)
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No. 30.—ELEMENTARY PHYSICAL SCIENCE II.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: One hour and a half. You are to answer five questions only. They may be taken from any one of the Sections B, C, and D, but you may not take some questions from one section and others from another section. At the beginning of your work indicate clearly which section you have selected. Illustrate your answers by labelled diagrams wherever possible.

SECTION B.—HEAT AND LIGHT.

1. Describe the apparatus you would use to show that liquids expand under the influence of heat. How would you use it to compare the amount of expansion of two different liquids for a certain rise of temperature? The volume of a certain quantity of gas at 0° C. is 20 cubic inches. What will be its volume at 100° C. if the conditions as to pressure remain constant?
2. What are the fixed points of a mercurial thermometer, and how are they determined? Why is it necessary to note the height of the barometer in determining the higher of these points? Describe the centigrade and Fahrenheit systems of graduation. What reading on the latter scale corresponds to a reading of 10° on the former?

3. Two thin brass vessels each contain 50 grams of water at 10°C . Into one 60 grams of water at 100°C . and into the other 60 grams of brass turnings at the same temperature are poured. What do you know as to the resulting temperatures of the water in the two vessels? Account for the difference, if any.
4. What is meant by "latent heat"? Describe any experiment you have performed or seen for determining the latent heat of water or of steam. Explain why a glass rod is preferred to a metal one for stirring hot liquids.
5. What do you understand by the focal length of a lens? Describe the arrangements you would make for throwing a clear image of a candle-flame on to a screen by means of a convex lens. What kind of image will be produced, and why? What measurements would you make to determine the focal length of the lens?
6. A ray of sunlight passes obliquely through a small hole in a piece of cardboard covering a rectangular glass vessel containing water. Trace as accurately as you can the path of the ray through the water. How can the path in water be made visible? What would be the effect of having a layer of kerosene above the water?
7. Describe any experiments you have performed for comparing the illuminating-power of, say, the flame of a candle and a lamp. What do you know as to the unit used in measuring the illuminating-powers of flames? An object is held (a) 2 ft. from a single candle-flame, (b) 4 ft. from three similar candle-flames side by side: in which case is it most brightly illuminated? Give reasons for your answer.
8. What is meant by "normal," "angle of incidence," "angle of reflection"? Describe how you would show that the angle of reflection is equal to the angle of incidence for a ray of light falling on a plane mirror. A boy at midday tries to flash the sun on to an object due west from him by means of a small mirror: in what position must he hold the mirror?

SECTION C.—ELECTRICITY AND MAGNETISM

1. How would you magnetize a darning-needle so that there would be a north-seeking pole at its point? How could you demagnetize the needle? What would be the effect of breaking the magnetized needle into pieces? What do you understand by "magnetic induction"? Describe experiments illustrating induction in the case of soft iron.
2. What is meant by "field of force" and by "magnetic lines of force"? Two bar magnets are supported in a horizontal

position parallel to each other and about 2 in. apart: how would you render the direction of the lines of force due to these magnets visible? Show by a sketch the direction of the lines (a) when the like poles point in the same direction, (b) when they point in opposite directions.

3. What is meant by "dip" and by "declination"? State approximately their value in New Zealand. Describe any simple home-made apparatus by which you could roughly determine the dip at a place. The lower end of a long steel rod is brought near the poles of a magnetic needle; it attracts one pole and repels the other: does this prove that the rod is a permanent magnet? If not, what further tests would you apply?
4. Explain the construction of a gold-leaf electroscope, preferably one you yourself have made. If you were given a rod of vulcanite and a piece of flannel, how would you charge the electroscope (a) positively, (b) negatively? Explain by means of diagrams what happens when you charge it positively.
5. An insulated metal ball is charged with electricity and then lowered inside an insulated tin can until it touches the bottom; it is then withdrawn without again touching the can: how is the charge of electricity now distributed? How would you show the distribution? In carrying out this experiment how would you insulate the ball and the can?
6. Name and describe some common form of voltaic cell, and explain how depolarization is overcome. Describe experiments showing the effect of altering (a) the size, (b) the distance apart, of the plates of a voltaic cell?
7. A battery consists of six similar cells, the electro-motive force of each cell being 1.8 volts and its internal resistance 0.3 ohm. The external circuit is a long copper wire having a resistance of 1 ohm. Show how you would arrange the cells of the battery, and find the current produced. What would be the effect of joining the terminals of the battery by two such wires (a) end to end, (b) side by side?
8. Show by diagrams the effect of the current in a long straight wire on a magnetic needle held in various positions near it. Explain the effect of placing the needle within a loop of the wire. Describe very briefly any electrical instrument in which use is made of this effect.

SECTION D.—CHEMISTRY.

1. Give an account of the structure of a candle-flame, and describe experiments you would perform to illustrate your answer. Why is the flame of a Bunsen burner non-luminous?

2. What is meant by "hard" water? How would you compare the hardness of two given samples of spring-water? Distinguish between temporary and permanent hardness, and state how each can be overcome.
 3. Give an account of the changes which occur when limestone is strongly heated, and when, after it has cooled, water is thrown on the solid residue. Give the ordinary and the chemical names of the different substances involved, also, if you can, chemical formulæ illustrating the changes you describe. What weight of magnesium oxide (MgO) is produced when an ounce of magnesium is burned in air? ($\text{Mg} = 24$; $\text{O} = 16$.)
 4. You are given half a dozen bottles of dry chlorine gas: what experiments would you perform to show the properties of the gas? Name some common substances containing chlorine.
 5. Compare the action of sulphuric acid on copper with its action on magnesium or zinc. How would you distinguish the gas produced in each case? How would you prove the presence of lead in lead oxide?
 6. Describe the apparatus you would set up to enable you to pass a current of dry hydrogen gas free from air over strongly heated copper oxide. Explain the changes which take place in each part of the apparatus during the experiment. What change is visible in the appearance of the copper oxide?
 7. Name the different modes of chemical action. Give one example of each, explaining the chemical changes which take place by means of formulæ.
 8. Write notes on the oxides of carbon under the heads of (a) preparation, (b) properties, (c) distinguishing tests.
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No. 31.—ELEMENTARY BOTANY.—For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).

Time allowed: Two hours. Attempt only five questions, of which the first question must be one. Illustrate your answers where you can by diagrams. These should be fully lettered, neatly executed, preferably in coloured pencil, and not crowded into the text of your answers.

1. Describe fully the specimen supplied to you. (NOTE.—The specimen must, when described, be placed in the envelope provided, which is to be labelled as directed, closed, and pinned inside the answer-book.)

2. Compare a bean or other dicotyledonous seed with a maize or wheat grain or any monocotyledonous seed.
3. What experiments have you made to illustrate the process of germination and the conditions under which it takes place?
4. In what parts of plants may reserve material be stored, what forms may it take, and what purposes may it serve in the life of the plant?
5. What are the chief substances obtained by plants from earth and air respectively? Describe any experiments you have made relating to substances obtained from the soil.
6. Mention four ways in which plants may adapt themselves to their surroundings. Give and explain examples of such adaptation.
7. Give a brief description of the plant societies you have observed in any *two* of the following situations: Hedges, swamps, bush, seashore.

No. 32.—ZOOLOGY.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: Two hours. Attempt all the questions. Draw diagrams where possible to illustrate your answers.

1. Describe as fully as possible the animal shown in the illustration on the opposite page. State the class to which you think it belongs, giving reasons. What do you know about its life-history?
2. By a comparison of the main points of structure of a rabbit and a seagull show how each is specially adapted to the life it leads.
3. Would you include spiders among insects? Give full reasons for your answer. Give a brief description of the web or snare of a garden spider and of the apparatus which the spider uses in its construction.
4. Describe any crayfish familiar to you. State whether it is a fresh-water or a sea crayfish. Give some account of the life-history and habits of the animal you describe.
5. Give an account of the external appearance of a typical fish. In what way does the flounder differ from such a fish?
6. Describe the respiratory system of the rabbit.

No. 32.—ZOOLOGY.



Diagram to Question 1.

Nov. Ex.]

[To face page 54.

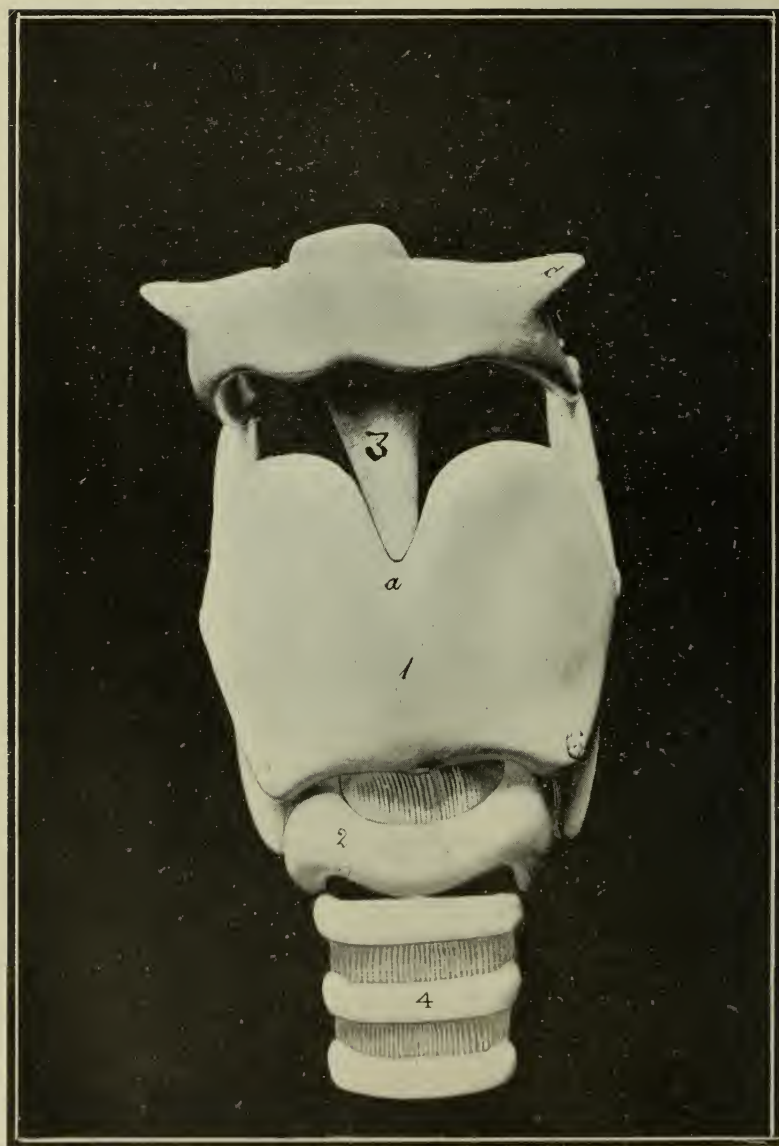


Diagram to Question 1.

No. 33.—ELEMENTARY HYGIENE.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: Two hours. Six questions to be attempted, of which one must be question 1. Wherever possible diagrams should be used to illustrate answers.

1. What is the name of the structure shown in the diagram on the opposite page? What purpose does it serve in the animal economy, and where is it placed in the body? Name and describe as fully as you can the portions numbered 1, 2, 3, 4, and show how the structure of each part is adapted for carrying out its special function.

2. What are the chief characteristics of (a) healthy, vigorous skin, (b) unhealthy skin?

What means should be used to train the skin, and what effects may be expected if such training is neglected?

3. What is usually understood by the terms "venous blood" and "arterial blood"?

Do all the arteries in the body contain arterial blood and all the veins venous blood? Give reasons for your answer.

What measures would you adopt to stop the flow of blood in the case of (a) a severed radial artery, (b) an injury to the nose, (c) a badly grazed shin?

4. What are the functions of hair? Describe the structure of a hair, and account for the colour of grey hairs.

What justification is there for the belief that sudden fright sometimes causes hair to stand on end?

5. By what simple tests could you ascertain the presence of (a) starch, (b) albumen, in common foods?

Give an account of the part played by the secretions of the alimentary canal in preparing these substances for absorption into the blood. To what substances is the activity of these secretions attributed? In what organs are the latter found?

6. Give a short account of the appearance, position, and functions of each of the following organs: The aorta, the pancreas, the liver, the thoracic duct.

7. Give reasons for the following maxims:—

(a.) Children should be taught to breathe through the nose instead of the mouth.

- (b.) Ice-creams and very hot drinks are both injurious to health.
 - (c.) Children require more sleep than adults.
 - (d.) A brisk walk is a better way of getting warm on a cold day than sitting near the fire.
8. What means of relief or restoration would you apply—(a) if a child had broken his collar-bone, (b) for an ankle sprained on the football-field, (c) for a badly scalded hand, (d) if a child had trodden on a rusty nail in the schoolroom?
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No. 34. — ELEMENTARY HOME SCIENCE I. — For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).

Time allowed : One hour and a half. Only six questions to be attempted.

1. Explain how the state of a liquid is affected by changes in its temperature, using water as an illustration.
Give a sketch of the apparatus you would use in order to find the boiling-point of water.
2. a.) Explain carefully why the polished fire-irons before a fire are comparatively cold to the touch while the black fender is unbearably hot.
(b.) Compare and account for the heat-retaining properties of an earthenware and of a metal teapot.
3. Given a U tube, water, and turpentine, describe carefully how you would proceed to compare the densities of these two liquids.
Describe any form of hydrometer you have used. On what principle is the use of the hydrometer based?
4. Give an account of the formation of coal. What form of carbon is derived from coal, and how is it obtained? Mention any purposes served by the various forms of carbon in ordinary life or in commerce.
5. Describe an experiment showing that air contains at least two gases present in unequal proportions. Name the gases, and say what purpose is served by each of them.
What other substances are found in air, and how may their presence be demonstrated? Which of them are to be regarded as impurities, and why?
6. What is the source from which the water-supply of the place in which you live is obtained? From what other sources is water

for domestic use commonly obtained? What are the chief impurities of water obtained from the various sources you have mentioned, and how may they be removed?

7. What do you know of oxides and their formation? Mention one solid, one liquid, and one gaseous oxide of common occurrence, and point out the characteristic properties of each.
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No. 35.—ELEMENTARY HOME SCIENCE II.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: One hour and a half. Six questions only to be attempted.

1. Give an account of the changes which occur in the following foods as the result of boiling: (a) eggs, (b) milk, (c) potatoes.
How do the changes you have described affect the digestibility of the foods mentioned?
Name some other foods in which similar changes occur on boiling.
2. What is the chemical nature of soap, whitening, emery? Mention the properties of each which make them useful for cleaning purposes.
3. What do you consider the most suitable materials for making—(a) preserving-pans, (b) table-knives, (c) saucepans, (d) table-spoons, (e) wire sieves? In each case give the reasons for your choice.
4. Give an account of the experiments you would carry out to ascertain—(a) whether a joint of meat loses water during the process of cooking; (b) the proportion of water contained in a parsnip (i) in the raw state, (ii) after it has been cooked. What other substances, if any, besides water are lost in each case?
5. Distinguish between wrought iron, cast iron, and steel, giving instances of the application of each in the construction of articles in common daily use in the home. What is galvanized iron? Give instances in which the use of it is preferable to that of iron not so treated.
6. How would you proceed to separate and identify the important chemical substances present in wheat-flour? On what grounds do we consider each substance to be a valuable food, and how is each prepared in the alimentary canal for absorption into the blood?
7. Explain the true causes of the appearances to which are due the popular ideas that the sun puts the fire out and raises the dust in a room.

No. 36.—ELEMENTARY DAIRY SCIENCE.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed : Two hours. Illustrate your answers by labelled diagrams wherever possible.

1. What substances have you proved to be present in milk ? Give full details of your experiments, and of the apparatus used.
2. What do you understand by "specific gravity" ? A given vessel is found to weigh 22·509 grams ; its weight when full of water is 47·643 grams, and when full of milk 48·398 grams : calculate the specific gravity of the milk-sample. What precautions should be taken when carrying out the above experiment ?
3. How are (a) whole milk, (b) skim-milk, (c) cream, tested for content of butter-fat ?
4. How is butter made ? Of what does it consist, and how would you test for its component parts ?
5. Sketch and give the use in connexion with dairy-work of the following apparatus : *evaporating-dish, acid-hydrometer, thermometer, lactometer, acid-measure, pipettes (various), burette.*
6. What is meant by "sterilization," and by "pasteurization" ? How is each carried out, and in connexion with what operations in the home and in the factory ?
7. Give in order of importance the points on which you would attempt to select a good dairy cow from a mixed herd. What is the real test of such a cow ?
8. Of what importance is a knowledge of the development of acidity during dairy operations ? What causes the acidity ? What apparatus is used to determine the amount of acidity, and how is it used ?

No. 37.—ELEMENTARY PRACTICAL AGRICULTURE.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed : Two hours. Illustrate your answers by diagrams wherever possible.

1. Describe a method of budding. State the object of, and the most suitable time of the year for, the operation.
2. Write full notes, with examples, on (a) pistil, (b) buds, (c) cross-pollination, (d) respiration of plants.

3. What plant-foods are most likely to be lacking in a soil? Name the chemical fertilizers which supply the substances you mention, and state when and how they should be applied.
4. Describe experiments to illustrate (a) a method of testing the vitality of seeds, (b) the presence or absence of lime in the soil, (c) that sunlight is necessary to the formation of starch in leaves, (d) that germinating seeds produce carbon dioxide.
5. Give details of the treatment you would employ for each of the following pests: (a) Irish blight, (b) rose-aphis, (c) cabbage-moth.
6. Describe the structure of (a) a French-bean seed, (b) an onion-seed. In what respects do they differ? Describe and illustrate by sketches what takes place on the germination of each.
7. Write full notes on any two of the following: Potatoes, swedes, lucerne, sweet peas, lettuces, under the headings (a) propagation, (b) manures, (c) cultivation.

No. 38.—GEOGRAPHY.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: Two hours. Eight, and only eight, questions are to be answered, four being chosen from Section A and four from Section B. Answers should be illustrated by diagrams or maps where necessary.

SECTION A.

1. Solve any *two* of the following problems:—

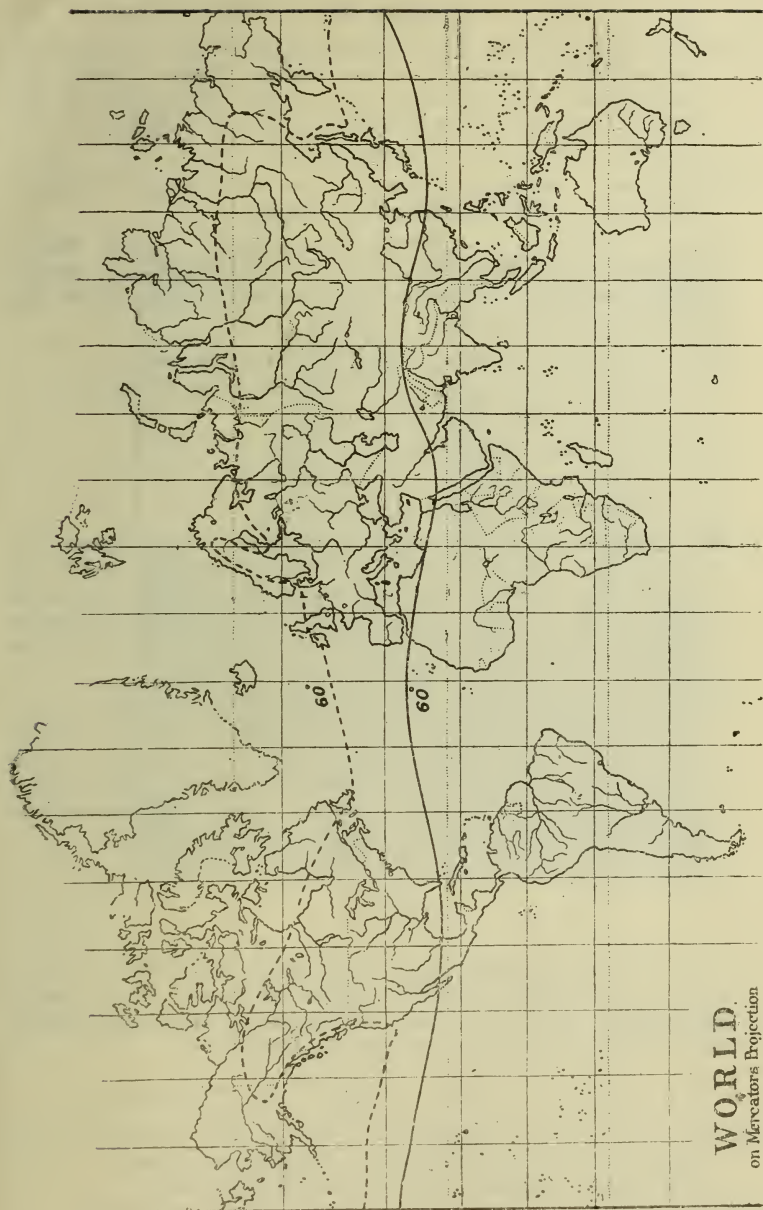
[N.B.—The working of each problem must be fully shown.]

- (a.) If the correct local time at Cairo ($31^{\circ} 24'$ E. long.) is 3.40 a.m. on Tuesday, find the correct local time at New York ($73^{\circ} 16'$ W. long.).
- (b.) On 22nd June the sun is observed directly north at midday, and his meridian altitude is $72^{\circ} 46' 18''$: find the latitude of the point of observation.
- (c.) A point in Celebes, on the Equator, is in 120° east longitude, and a point in Ecuador (also on the Equator) is in 30° west longitude: find the distance in English miles between the two points.

2. The isotherm of 60° for July is represented by the dotted line marked 60° in Plate A (see page 61), and the January isotherm of 60° by the continuous line marked 60° . Taking the isotherms separately, explain why they do not run across the earth parallel to the Equator but curve to the north or south.
3. Explain, and illustrate if necessary, any *four* of the following terms: Bore or aegir, contour-lines, pampas, meander, solstice, hanging valley, talus slope.
4. Name the gases of which the atmosphere is composed. Which of these gases play an active part in the "weathering" of rocks? Give from your own observation an instance showing the changes in rocks caused by weathering. Describe the structures found in a typical limestone cave, and in this connexion explain the part played by one of the atmospheric gases. Name localities in New Zealand and Australia in which such caves are found.
5. What is meant by the snow-line? Give approximately the height above sea-level of the snow-line (a) at the Equator, (b) in the Southern Alps of New Zealand.

In a mountain-range running east and west in North Italy, at a certain height above sea-level perpetual snow is found on one face of the range, and on the other face at the same height there are olive groves. Account for the difference in climate. Which is the cold face?

6. State the importance of tides. Explain and illustrate the phenomenon of neap-tide.
7. What do you know of the effect of the direction of prevailing winds on rainfall? Give two examples. Where in New Zealand is precipitation greatest, and where is it least? Why? Account for the excessive dryness of Central Australia and of the rainless district of Peru.
8. The photograph in Plate B (see opposite page 62) was taken in Colorado, U.S.A., in "The Garden of the Gods." Assuming that when looking at the photograph you are facing due south, answer the following questions:—
 - (a.) About what time in the day was the photograph taken?
 - (b.) Can you give any explanation of the formation of these immense masses?
 - (c.) Give approximately the height of the highest peak. Tell how you arrived at your result.
 - (d.) Is the climate of this part of Colorado moist or arid? Give reasons for your answer.



SECTION B.

9. Draw a map showing all the countries between Colombia and the southern boundary of the United States. Mark the boundaries of the various countries, and the position of any towns, geographical features, &c., that you consider of importance, writing a short note on each.
10. London as a port has a few defects, but many advantages. Enumerate these defects and advantages.
11. What do you know of any *five* of the following? Tyrol, Pamir, Tyrone, Genoa, Belgrade. Rhodesia, Canberra, Essen, Osaka. Mark on Plate A (see page 61) as nearly as possible the position of those selected by you.
12. Write short notes on Egypt under the following heads:—
 - (a.) Climate, giving reasons for the nature of the climate.
 - (b.) The importance of the River Nile.
 - (c.) The people and government.
 - (d.) Ancient civilization and antiquities.
 - (e.) Products and means of transit.
13. What important transcontinental railways do you know of? State briefly why you consider each of those named to be important. What transcontinental railways are projected in Australia? Since a great part of the interior of Australia is desert, what, in your opinion, will be the use of these railways when finished?
14. What places are referred to as: "The Clapham Junction of the Eastern Seas," "The Key of the Mediterranean," "The Gift of the Rhine," "The Grave of the White Man," "The Dark Continent," "The Sick Man of Europe," "The Buffer State of India"? In each instance explain why the term is appropriate? (Answer *five* only.)

No. 39. ENGLISH HISTORY.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: Two hours. Answer seven questions only.

1. Select any five of the following and say how they are noted in the history of the British Empire: Wandewash, Assaye, Cintra, Quatre Bras, Candahar, Tel el Kebir, Majuba Hill.
2. What was the main point in dispute between the American Colonies and the Mother-country in the latter half of the eighteenth

No. 38.—GEOGRAPHY.



PLATE B.

Diagram to Question 8.

Nov. Ex.]

[To face page 62.

century? In what ways did Britain endeavour to apply the principle involved? What plan has since been followed by Britain in dealing with her colonies?

3. Name the most important overseas possessions of the British Empire, and state what form of government is adopted in each case.
4. Give a concise account of (a) the causes and (b) the results of the Indian Mutiny.
5. What was the French Revolution, and what led to it? How were British interests affected by it? Account for the change of British opinion in regard to the movement as time went on.
6. Contrast the life-work of the two Pitts—father and son. In what respects were the characters of the two men essentially different, and in what did they resemble each other?
7. How and when did England finally establish her naval supremacy? What is meant by “the two-Power standard”? Explain its importance.
8. Name the chief electrical inventions or discoveries made during the reign of Queen Victoria, and explain their importance to commerce.
9. Name the States of the Australian Commonwealth, first in the order of their formation as colonies, and secondly in the order of their present importance. What do you know of the foundation of South Australia or of the early history of Western Australia?
10. How often does a general election take place in New Zealand? Describe the process of voting, and say what you understand by the terms “plural voting,” “informal vote,” “by-election.”

No. 40.—SHORTHAND.—For Public Service Entrance only.

Time allowed: Eight minutes for the dictation, and one hour and a quarter for the transcription of the printed and dictated passages jointly.

INSTRUCTIONS TO SUPERVISORS.

1. You will note that in the Public Service Entrance Examination the rate of dictation is eighty words a minute, and that one hour twenty-five minutes is allowed on the time-table for the subject; in the examination for Senior Board Scholarships, Senior Free Places, &c., the rate is sixty words a minute, and one hour ten minutes is allowed on the time-table.

2. Inform the candidates before the time for taking this subject that a candidate may use pen or pencil as he pleases for taking notes, which should be written in a ruled notebook, but that he must transcribe those notes into longhand with pen and ink in one of the manuscript-books provided. The candidates may use their own notebooks for the dictation if they prefer to do so.

3. Inform them also that the clearness and accuracy of the shorthand notes (which must in every case be handed in together with the transcript) will be taken into account by the examiner.

4. Inform candidates that when once you have begun to dictate you cannot stop until the passage is finished.

In order to accustom the candidates to the sound of your voice, you should for some minutes read matter other than that contained in the test. The reading should be at about the same rate as the test piece, and the candidates may take a note of it or not as they please, but they need not transcribe it, nor are they to regard it in any way as forming part of the examination.

5. Dictate the passage at the rate of 80 words a minute.

6. After finishing the dictation, distribute six-leaved manuscript-books to the candidates, and hand each of them at the same time one of the printed passages appended hereto for transcription into fully vocalized shorthand, detaching the slip for the purpose by tearing along the perforation. Inform candidates that the latter exercise is to be taken first, and that not more than fifteen minutes can be allowed for it.

At the end of fifteen minutes collect the slips, and allow a further period of sixty minutes for the transcription of the dictated passage. Take care that each notebook (as well as each manuscript-book) bears the candidate's examination number.

N.B.—The matter to be read is marked off by black-type figures into sections, each of which is to occupy a minute, and also by thin lines, into smaller sections, each containing the number of words to be read in fifteen seconds.

PASSAGE FOR DICTATION AT THE RATE OF EIGHTY WORDS A MINUTE.

(This passage takes eight minutes to read.)

I very strongly approve of the suggestion that the expenditure on roads should increase, and also that the expenditure upon | buildings should be kept within limits. Still, we all know that we must have public buildings—post-offices, railway-stations, || and so on. The member for Patea, I learn, has got a new post-office, on which I congratulate him. ||| Regarding the remarks of the member for Napier, I would like to say that, though the population may be only (1) some nine hundred, Patea is the centre of a very large and closely settled district, and the farms are all | small. There are no places such as there are in the district of the member for Napier—no large runs.|| They are all small farms around Patea. I am not in

favour of large areas of land being held by ||| individuals, and never was. I am in favour of as close a division of the country as is practicable. I (2) was rather disappointed that we did not hear from the member for Napier. I was listening to hear about how | the blackberry was getting on, and the goats, and that sort of thing. But my purpose in rising to-night || was not to criticize the estimates, but rather to allude to what has been already mentioned by some members—that ||| is, the necessity for a change in the system under which we deal with grants for roads and bridges. That (3) is a matter which has been before the House on more than one occasion. I consider that the time has | come, and throughout the country there is a strong feeling that the time has come, for a change in the || system. At present it is about as bad as it can be. It is bad for the country, bad for ||| members of Parliament, and it is not pleasant or good for the Minister or Government. The present system is this: (4) the local bodies hand in to the member a list of the grants wanted, and he goes to the Minister, | and spends the session in dunning him to get the money for his district. With a Minister like the present || one, sincerely anxious to make the money go as far as possible, and to spend it to the best advantage ||| for the good of the country, and who is entirely free from political influence, there can be no possible suggestion of (5) unfairness. I consider the present Minister is free from any political influence. That is why I say so. I | am not referring to past Ministers, but to the present one. The system is obviously open to abuse. I have || no hesitation in saying that it has been grossly abused in the past, and may be grossly abused in the ||| future if it is not altered. It will be admitted by most honourable members that the true province of government (6) in respect to these grants is to assist local bodies in the settling of the back country—the undeveloped portion | of the country—by roads and bridges. And, of course, provision must be made to a certain extent for public || buildings. It has been suggested at some County Council Conferences, to which the member for Patea referred, that a system ||| of graduated subsidies should be initiated. Now, there are many very clear and strong objections to that policy. In the (7) first place, it would benefit the wealthier districts, which do not require the money so much as the poorer, to | the disadvantage of the poorer. It appears to me that it is absolutely essential, before we can do anything in || the way of establishing a proper system with regard to grants, that the districts throughout the Dominion should be classified. ||| There should be some system of classification, but this again is extremely difficult, owing to the nature of the country. (8)

PASSAGE TO BE TRANSCRIBED INTO FULLY VOCALIZED SHORTHAND.

I am greatly astonished at what I have seen. I think that no person could have been at this lecture, or attended the one that was given last week, without being convinced that all that has been pro-

mised by this science may easily be performed ; and that it is so exceedingly simple as to be easily learned by every person of ordinary capacity ; and if it be learned by a very large number of people, the public benefits to be derived from it are entirely incalculable.

[NOTE.—(1.) *This exercise may be worked with pen or pencil at the option of the candidate.* (2.) *Special account will be taken by the examiner of correct and neatly written outlines.*]

No. 41.—SHORTHAND.—INTERMEDIATE EXAMINATION.—*For Education Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, and for the First Examination of Pupil-teachers.*

Time allowed : Eight minutes for the dictation, and one hour for the transcription of the printed and dictated passages jointly.

PASSAGE FOR DICTATION AT THE RATE OF SIXTY WORDS A MINUTE.

(The passage takes eight minutes to read.)

He said the “spoils to the victors” policy was in force. I thought that idea | had been dropped, and that honourable gentlemen opposite would have realized that the “spoils to || the victors” policy no longer existed. I should like to say that, like the honourable ||| member for Napier, although I support the Government, I am disappointed with the amount of (1) grants I have received for my district ; but knowing that the Minister was anxious to | give the money, we realize that he was not able to give us all the || grants we wanted. The fact of the matter is that the applications amount to about ||| five times the sum of money available, and the Minister of Public Works has to (2) do the best he can with the funds now at his disposal. Sir, my honourable | friend the member for Wallace, who is not in his place in the House, referred || to myself in connection with the Public Debt Extinction Fund. I want to reply to ||| what he said. He stated that I was supporting a Government that in their prospectus (3) of loans in London had quoted the Public Debt Extinction Fund as being in existence, | and also as being an argument to show the strong financial position of this country.|| I wish to say now that I have always believed in a sinking fund, but ||| I have never believed in a sinking fund at the same time that you are (4) borrowing money. I never could see the reasonableness of borrowing money at the rate of | millions and setting aside a sinking fund at the rate of hundreds ; but, all the || same, it must be remembered that the Minister of Finance, who is responsible for | that ||| part of the Government policy, has always been a believer in a Public Debt Extinction (5) Fund, and when the Bill was before the House he supported it. As far as | I am

aware he has always supported a sinking fund, even when the country is borrowing. Although I support the Government, I do not think it necessary to agree in every point with the opinion of every Minister in the Government. The Public Works Statement, (6) I think, is a plain and clear statement. It appears, so far as one can judge of it, to make the most of the money which is available. The expenditure last year, apparently, was the largest that there has been for thirty years, and the expenditure this year will also be very large. I agree with honourable members who have (7) spoken before, in so far as I regret that so much money is being spent upon public buildings as compared with what is being spent on roads, but I recognize the fact that the Government have had to take over the commitments of the previous Government in regard to many large buildings, which have been commenced and must be finished (8).

PASSAGE TO BE TRANSCRIBED INTO FULLY VOCALIZED SHORTHAND.

I am greatly astonished at what I have seen. I think that no person could have been at this lecture, or attended the one that was given last week, without being convinced that all that has been promised by this science may easily be performed; and that it is so exceedingly simple as to be easily learned by every person of ordinary capacity; and if it be learned by a very large number of people, the public benefits to be derived from it are entirely incalculable.

[NOTE.—(1.) *This exercise may be worked with pen or pencil at the option of the candidate.* (2.) *Special account will be taken by the examiner of correct and neatly written outlines.*]

No. 42.—BOOK-KEEPING AND COMMERCIAL CORRESPONDENCE.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

Time allowed: Three hours (inclusive of tots). Question 1 must be done first.

1. Exercise in tots. (See separate paper, No. 43.)

[Your tots will be collected fifteen minutes after the commencement of the sitting.]

You must attempt both of the exercises A and B.

Before you begin totalling, write your examination number in the space provided.

Add the columns in A horizontally and in B vertically.

Lead-pencils are *not* to be used.

Note that these exercises are intended to test your ability to add correctly and rapidly, but that accuracy should not be sacrificed to rapidity.

2. On 1st October, 1914, N. Asher commenced business with £500 cash, of which he had borrowed £200 from F. Boyd.

On the same day he purchased for £400 cash the business of W. Craig, whose position was as follows:—

<i>Assets.</i>				£	s.	d.
Goods	...	...	...	350	0	0
H. Dudley	...	...	...	48	10	0
S. Ellis	...	...	...	15	6	0
H. Finch	...	...	...	136	12	0

<i>Liabilities.</i>				£	s.	d.
M. Gibbons	...	...	...	135	10	0
T. Hardy	...	...	...	14	18	0

The following transactions also took place during the month:—

	£	s.	d.
Oct. 2. Purchased goods from T. Hardy	87	5	0
" 3. Paid telephone-rent, 3 months, to 31st December	1	10	0
" 4. Paid for shop-fittings	42	0	0
" 7. Received cheque from S. Ellis	15	6	0
" 9. H. Dudley sends P.O. in full settlement to date	47	6	0
" 10. Bank advises that S. Ellis's cheque is dishonoured.			
" 16. H. Finch purchased goods	18	17	0
" 17. Sold goods to H. Dudley	22	11	0
" 18. Received goods from M. Gibbons	62	9	0
" 19. Allowance made to H. Finch for goods damaged in transit	2	10	0
" 20. H. Finch remits cheque £136 0 0 and deducts discount 0 12 0			
	136	12	0

Advised Finch that the discount could not be allowed.

" 24. Remitted cheque to M. Gibbons, including 4s. exchange	135	14	0
" 26. N. Asher withdraws goods for private use	10	10	0
" 28. Supplied goods to H. Dudley	17	4	0
" 30. Paid F. Boyd interest to date £1 0 0 and in reduction of loan 20 0 0			
	21	0	0

		£	s.	d.
Oct. 31.	Cash sales during month ...	105	0	0
	Trade expenses paid ...	26	15	0
	Rent due to D. Ingram ...	8	8	0
	S. Ellis's debt is considered irrecoverable.			
	Treat shop-fittings as now worth ...	41	0	0
	Stock on hand at this date ...	367	0	0

You are required to—

- (a.) Record the above transactions by means of cash-book, day-book, purchase-book, and journal.
- (b.) Post to ledger.
- (c.) Extract trial balance.
- (d.) Prepare profit and loss account and balance-sheet as at 31st October, 1914.

(N.B.—All cash was banked on the day of receipt, and all payments were made by cheque.)

3. On 1st August, 1914, D. Corrigan sells goods to K. Lindsay for £88 7s. 6d., and on the same day receives Lindsay's promissory note, drawn at three months, for the amount. On 4th August Corrigan discounts the P.N. with the Bank of New Zealand, the discount being £1 7s. 6d. Lindsay is unable to meet the P.N. when it falls due, but three days later settles by means of a cheque for £38 7s. 6d., and a new P.N., drawn at one month, for £50.

Show by means of journal entries how these transactions should be recorded by D. Corrigan.

4. Explain the following terms: Bankruptcy, maturity, overdraft, crossed cheque, trade discount, nominal account, receipt, credit-note.
5. What is the least number of books necessary to completely record business transactions by means of double entry? Name them, also any additional books that might be used, stating what advantage (if any) there would be in using them.
6. (a.) What do you consider are the chief characteristics of a good business letter?
- (b.) Referring to the items dated 10th and 20th October in question 2, write letters as from N. Asher, of Wellington,
 - (i) to S. Ellis, of Masterton, requesting a settlement within three days under threat of legal proceedings;
 - (ii) to H. Finch, of Palmerston, explaining why discount could not be allowed.

No. 43.—TOTS.—(Question 1 of the Paper in Book-keeping and Commercial Correspondence.)—For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).

Time allowed : Fifteen minutes. Use of lead-pencils not to be permitted.

A.—Gross Tots.								Totals.*
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	
6,361	57,607	46,209	374	789	8,991	51,089	498	684
39,427	86	358	4,089	5,650	427	47,777	3,985	59
89	1,230	9,432	68,535	269	27,565	759	76,848	897
3,714	72,871	857	7,812	8,691	9,543	6,499	616	77
138	1,457	53	784	606	371	888	7,308	38,475
20	3,333	440	8,707	81,297	37	331	6,245	7,887
76,429	687	38,696	46,058	5,885	42,768	9,746	86	688
58,749								

*Add horizontally, and place the results in ink in this column.

B.—LONG TOTS.

(1.)			(2.)			(3.)			(4.)			(5.)		
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
7,258	6	4	722	1	10	1,630	3	5	6,234	5	6	5,352	4	8
38,691	18	7	8,355	4	1	271	0	6	572	12	11	67,777	16	5
796	7	3	99	6	5	58,023	15	7	543	2	1	567	5	4
7,121	6	8	2	19	11	134	16	8	47,037	17	10	876	3	3
9	14	7	309	2	6	735	18	0	7	17	7	8,256	10	7
208	0	5	45,517	9	3	9,058	11	1	8,963	2	8	29	8	7
27,777	7	7	3	15	6	8,486	5	0	43	2	0	73,985	3	2
6,726	9	8	3,395	12	2	73	7	6	69,569	6	3	207	11	1
4,830	11	11	97	13	4	9	9	5	3	19	8	5,935	0	8
89	14	0	2,142	19	9	66,429	17	6	65	0	4	9	17	6
119	5	10	659	5	8	6,835	18	3	874	8	5	3,222	2	7
2,846	4	9	76,483	0	0	365	3	7	9,439	17	2	86	8	11
8	10	0	1,747	4	7	2,908	9	9	524	9	6	81,908	5	10
3,376	8	8	941	12	5	3,978	16	2	81,673	13	7	7,878	7	8
Totals* ...														

*Add vertically, and place the answers in ink in the spaces provided.

No. 44.—INSTRUCTIONS ABOUT DRAWING I.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examinations of Pupil-teachers).*

Time allowed : One hour and a half.

A board or a piece of strawboard (preferably a drawing-board), 15 in. by 22 in., is to be placed horizontally so that its upper surface is about 18 in. above the floor. A short time before the time fixed for the examination the objects supplied (lantern and match-box) are to be placed on the board in accordance with the given photograph (see opposite page). The lantern is to occupy the centre of the board, with the edges of its base parallel with the edges of the board. The match-box (half open) is placed parallel to the diagonal of the base and 1 in. from the nearest side of the lantern.

The candidates should be placed around and about 8 ft. from the board. If there are more than ten candidates, two or more groups of models should be set up.

No. 45.—INSTRUCTIONS TO CANDIDATES IN DRAWING I.—*For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).*

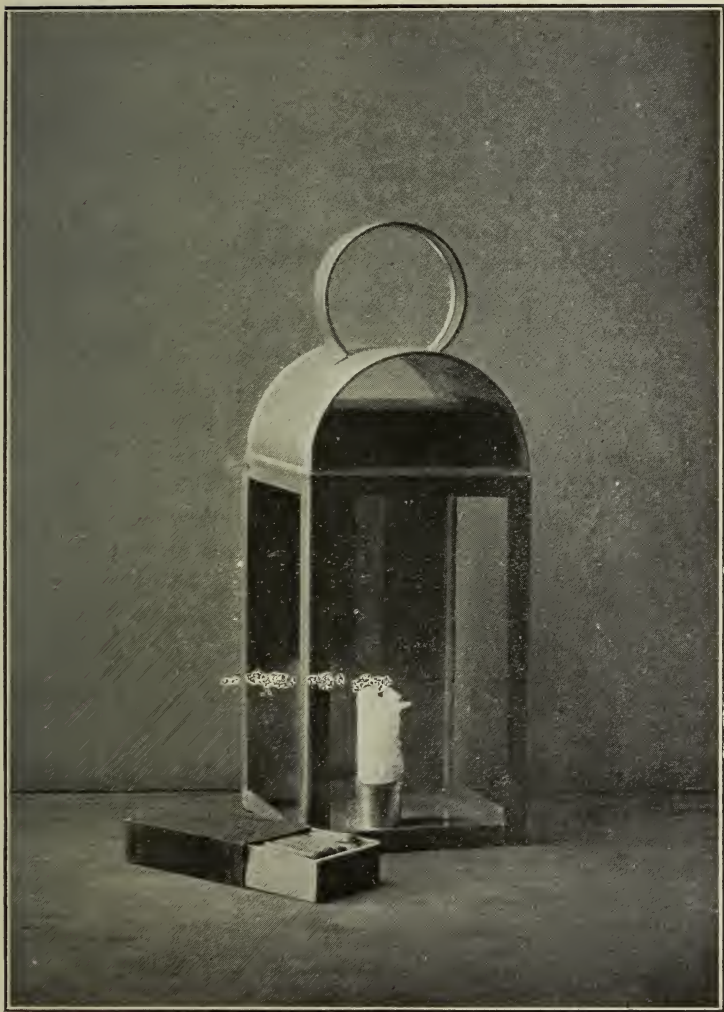
Time allowed : One hour and a half.

Before beginning your drawing enter your examination number in the space provided on the drawing-sheet. Enter also at the top of the sheet the name of the subject and the class of examination, but do not write your name or the name of the centre on any part of the paper. Do not fold your drawing when it is finished, but hand it to the Supervisor open.

You are required to make a drawing in outline of the objects placed before you, including the board on which they stand, as they appear to you from the position you occupy.

You may, if you like, and if time permits, shade your drawing.

Your drawing must *fairly fill* the sheet of paper supplied to you. Small drawings will be cancelled. You may use your pencil to estimate the apparent relative sizes of the objects or parts of the objects to be drawn, but only by holding it between the eye and the objects. No other forms of measuring and *no ruling* are permitted.



Photograph of Objects referred to.

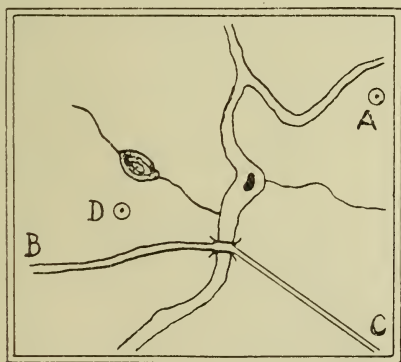
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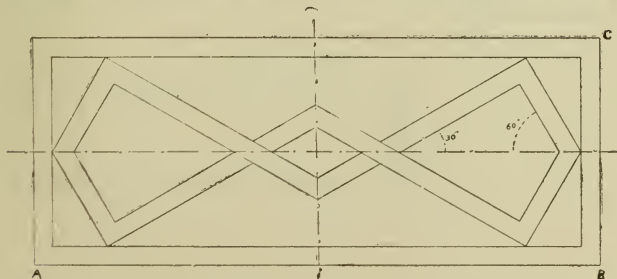
No. 46.—DRAWING II.—*Drawing with Instruments.*—For Public Service Entrance and Intermediate Examinations (Public Service Entrance, Board Senior Scholarships, Senior Free Places in Secondary Schools and District High Schools, First Examination of Pupil-teachers).

Time allowed : One hour and a half. Four questions should be attempted, of which one must be No. 5 or No. 6. No credit whatever will be given for solutions that appear to be the result of experiment—i.e., those in which the lines used to obtain the result are not clearly shown. The construction should be fully shown, and distinctly and neatly finished in fine pencil or in ink. Careless work, or work done with pencils that are blunt, coarse, or too soft, will receive little credit. Before beginning your drawing enter your examination number in the space provided on the drawing-sheet. Enter also at the top of the sheet the name of the subject and the class of examination, but do not write your name or the name of the centre on any part of the paper. Do not fold your drawing when it is finished, but hand it to the Supervisor open.

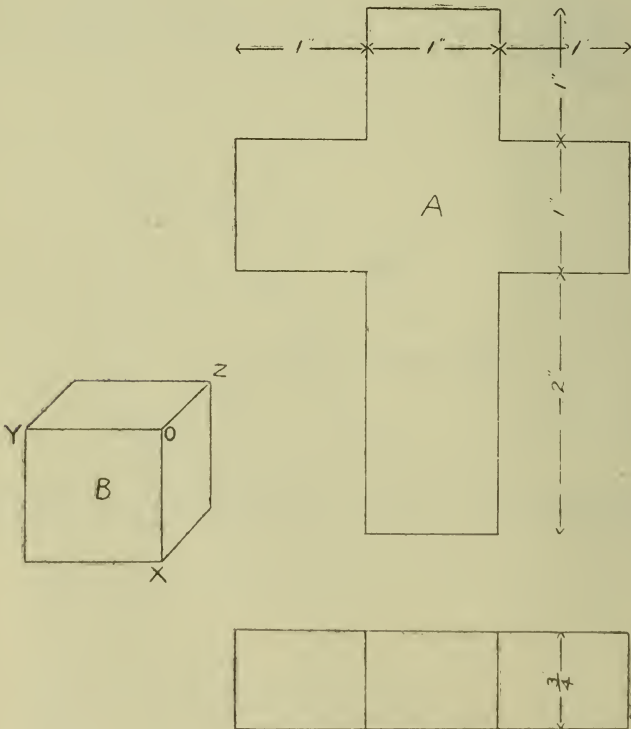
1. On the given map the town A is 1 mile 110 yards from the nearest point on the road BC: construct the scale on which this map is drawn. The scale should be properly finished and figured. What is the distance from A to D as the crow flies?



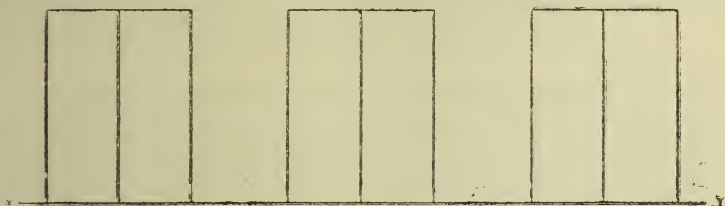
2. Copy the diagram, making AB $7\frac{1}{2}$ in. and BC 3 in. The border and the interlacing band are to be $\frac{1}{4}$ in. wide.



3. The top of a gate is in the form of a circular arc. The gate is 5 ft. 1 in. high in the centre and 4 ft. 9 in. at the sides, the width being 3 ft. 3 in. Draw the shape of the gate to a scale of 1 in. = 1 ft. (If your ruler is graduated in twelfths of an inch you need not construct a scale on your paper.)
4. The angles of a triangle are in the ratio of 2 : 3 : 4; the length of its longest side is 5 in.: construct the triangle, and measure and write down its perimeter.
5. The plan and elevation of a cross and a view of a cube are given. Draw a view of the cross to the dimensions shown, using the same construction as in the case of the cube, where lines parallel to OX and OY are drawn *full* size vertically and horizontally, and lines parallel to OZ are drawn *half* size at an angle of 45° to the former. The front vertical face A of the cross corresponds with the front face B of the cube.



6. Three different regular prisms, when placed in certain positions on the horizontal plane, have identical elevations, as shown in the given diagram. Each prism has a different regular plane figure for its base. Draw the corresponding plans. (N.B.—The elevations should first be drawn on your paper double the size shown.)



APPENDIX.

EXTRACTS FROM REPORTS OF EXAMINERS.

[N.B.—The number of the paper referred to in each case is the number as given in consecutive order in the pamphlet.]

No. 1.—ELEMENTARY SCIENCE.—Junior National Scholarships.

The paper set in elementary science was such that it could not be answered satisfactorily by candidates who had perhaps a good general knowledge but who had not received special training in some branch of science. It was expected, further, that, to a limited extent, candidates would not only have carried out some practical work, but would also have had some practice in recording in their own words the results of their simple experiments. That too much was not expected was shown by the satisfactory number of papers in which the answers were set out thoughtfully, definitely, and accurately. On the other hand, it was evident that many candidates had received no training whatever in any branch of science, whilst many others had had no proper training, for evidently their chief preparation had consisted in learning by heart the answers of possible questions.

The results of the examination emphasized the necessity for training the faculty of observation. It would seem incredible that though quite five hundred candidates attempted to describe the germination of a French bean, and probably most of them had observed it casually, fewer than six individuals were able to do it accurately. The answers given to other questions, though not so markedly at fault in this respect, bear out the truth of my statement.

From the information given in questions dealing with food and hygiene, it is pleasing to note that due importance is attached in the schools to instruction in the care of the teeth. However, more might be made of the important principles underlying the most elementary operations in cookery, and it was notable, for example, how comparatively few candidates could explain the difference between boiling and stewing meat, or had a reasonable conception of the composition of milk and the effects of heating it.

The questions dealing with cows and dairy science elicited very satisfactory answers, but the same cannot be said of the questions on agricultural and natural science, although the latter offers an easier and better practical course for both town and country schools than does almost any other branch of the work.

Evidently much useful work has been done in physical measurements, although inability to describe the practical operations spoiled the answers of a number of candidates.

It might be remarked further that the interdependence of the different subjects of the examination was demonstrated by the fact that faulty spelling, though all too common, was seldom noticed in papers showing a good scientific training. It should be remembered that the purpose of a training in elementary science is to teach students not to amass a knowledge of facts, but to observe, to record their observations in simple concise language, and to draw their own conclusions about what they have seen.

No. 5.—ENGLISH.—Junior National Scholarships.

THE results of the present examination show a gratifying improvement so far as the better candidates are concerned. Of those whose work is below scholarship or even free-place standard the percentage is still, however, too large, and the only conclusion to be arrived at is, therefore, either that the teaching in these cases has been grossly inefficient, or that no check has been imposed in entering the names of incompetent pupils.

Much of the essay work is of a pleasing character. Considerable originality of thought is shown, and in many cases a commendable fluency of expression. Occasionally there is a tendency to unnecessary verbiage, quantity rather than quality being aimed at, and a consequent drifting-away from the subject-matter into irrelevant side-issues. Among the subjects set, "The advantages of a good education" seemed to find much favour, but it is pathetic to note how large a number of children look upon education as a single means to a single end—the fitting of the individual to make money in the easiest possible way. "High wages and light work" is with them the motto to be inscribed on the banner of educational progress.

Among the more detailed faults the misuse of pronouns is of common occurrence, the indefinite "one," "he," and "they" often having the same subject of reference. Unsuitable adjectives are frequently employed, and there is too great a tendency to make use of slangy words, colloquial phrases, and expressions in bad taste. "Billet" and "job" are used where "appointment," "position" or "situation" would be more appropriate, "mate" is used as synonymous with "companion," and "to loaf" and "grafting" occasionally do duty for "to waste time" and "working hard" respectively.

Question 2, dealing with direct and indirect speech, was well done by a large majority of the candidates.

Question 3, as might be expected, showed a great range of values, but proved a most useful adjunct to the more formal composition as a means of testing original thought and the power of felicitous expression.

Question 4, while reasonably well done by a fair number, proved somewhat difficult for a large section of the weaker candidates.

Question 5 was answered very disappointingly by a large proportion of those sitting for the examination. Even where corrections were rightly made, the reasons given were in many cases faulty and haphazard.

Question 6, while bringing to light a few really excellent paragraphs, showed that considerable confusion of thought exists as regards the distinction of meaning between "envious" and "enviable," "eligible" and "illegible" also presented difficulty, the latter being taken as synonymous with "non-eligible," and both as having some notion of legality or of illegality.

Question 7, badly answered as it was by a few, still showed indications of a wider range of reading on the part of boys and girls of school age, a fair number of the candidates showing a first-hand and appreciative acquaintance with the authors dealt with.

No. 15. ENGLISH I.—*Public Service Entrance.*

Very little need be stated by way of comment on the work of the candidates and hints to teachers beyond what has been published already in previous reports, except the important fact that the faults and defects therein noted have diminished greatly during the last three years, and that the present examination shows a very pronounced improvement, especially in (i) parsing, (ii) appreciation of the elementary features of style, and (iii) general arrangement and setting-out of the answers. One still comes on runs of exceedingly weak candidates apparently from inferior or unfavourably situated school but the work of the average or "model" candidate is of much better quality in so far as tested by this part of the examination.

The average work of the candidates for entrance into the Public Service is very much lower than that of the candidates for Senior Board of Education Scholarships.

The analysis was generally very good. The parsing was much better than that of last year both in accuracy and in fullness; but the treatment of "are heard" was often very defective. In the explanation of words and phrases (question 3) a great many answers would have been greatly improved by brevity and by exactness of definition. The exercise in reporting speech was generally satisfactory; but a great many do not realize the importance of an absolutely faithful rendering, of retaining the exact words of the speaker unless the rules of grammar demand the change that is made. This exercise must not be confused with that of paraphrase. Some candidates spoiled their renderings by repetitions of "he said," "he explained," &c., and by needless interpolations such as "Turning towards the Lords," "Rising to a great heat," and so forth. There are still a few candidates who do not know what reported speech is. The punctuation was done very much better than last year, there being more evidence of close observation of good models. Perhaps the answers

to question 7 were the least satisfactory. Explanations were rarely concise and to the point; but many gave appropriate examples. Nearly all the candidates tried the last question, which required a knowledge of the elementary qualities of style, and generally with very fair results. Each critical remark should be supported by a definite reference to the text.

No. 19.—LATIN.—*Public Service Entrance Examination.*

The general remarks made in reference to the Intermediate Examination (No. 20, *seq.*) apply equally to this. In most cases Section B was responsible for the low marks obtained.

In Section A the meaning was fairly well grasped in the majority of cases. The English of the translations was, however, very crude—e.g., “Which when Cæsar noticed,” “which might carry soldiers,” and such expressions were common. The war seemed to have coloured candidates’ views, and was perhaps responsible for such translations as “He determined to support the army on two meals a day” for *Duobus commeatibus exercitum reportare instituit*—in spite of the fact that “*commeatus*—us, a voyage” was given in the notes.

Section B: In question 4 the majority insisted on using *vita* (or more often *viva*) in the translation of “their lives might be spared”—again in spite of the note given.

A considerable number failed to translate an infinitive of purpose by *ut* and the subjunctive.

Section C: Question 1 usually well done, but in nearly every paper the candidate failed to mark the changing quantity in *removeri* and in *eveniret*.

Question 2 was badly done. A number of candidates contented themselves with giving tense and mood when asked to *explain* the mood. The following statements were made: “*Dixisset* is in the ablative absolute”; “*Eveniret* is subjunctive mood after ‘that’”; “*Dixisset* is subjunctive after *cum* understood, *cum* is not put in because there is an adjective with *voce*”; “*Portaret*, perfect active subjunctive, agreeing with ‘soldiers’”; and many others giving evidence of badly assimilated knowledge. The alternative was badly done.

Question 3: In a number of cases a complete sentence was not given. The majority of the candidates kept to the wording of the extract, and those who departed from that usually departed from the facts also.

No. 20.—LATIN.—*Intermediate Examination.*

In this examination I found a larger number of good papers and also of very bad ones than in the Public Service Entrance Examination. In some cases it was hard to understand why the candidates had been allowed to sit for the examination. Generally speaking, the want of any knowledge of grammatical structure seems to have militated considerably against acquiring a real understanding of such a language

as Latin. There is also to be noticed in both examinations what I may call a lack of common-sense and of practical power of dealing with material: quite a number of candidates, and those not always the worst, fail to take advantage of the help given in the notes, and of that given by Section A when dealing with Section B.

Section A: On the whole the translation was very fair. The first piece was the worst done; in very few cases was the last sentence understood. In the second, a very common mistake was to make *cum* a preposition and also *adversum* in spite of the note. The third piece was perhaps the best done—in some cases it was evidently not sight work. A bad mistake and a very general one was to translate *Legatis respondit* as “the Ambassadors replied.” Such translations, and also such as “With a small number of cavalry” for *Cum paucis ante diebus equites* show the ignorance of grammatical construction to which I have already referred.

Section B was only fairly done. In 1 (*b*) very few use a gerund; in some papers there was no attempt to do so; in the majority the gerundive was used. In 1 (*d*) it was the exception to find the accusative-infinitive construction used to translate the noun clause.

Section C: Question 1 was well done. Question 2 was very badly done. Such statements as the following were common: “*Gessissent* is subjunctive because it is in a ‘when’ clause”; “*Gessissent* is subjunctive after the preposition *cum*.” In one paper the two statements followed each other, “*Ducerentur* is subjunctive because it is an indirect clause in *Oratio Obliqua*”; “*Fecisse* is infinitive because it is an indirect clause in *Oratio Obliqua*.” The alternative and question 3 were also badly done.

No. 21.—FRENCH.—Public Service Entrance.

This was a very good examination, there being few really weak candidates. The passages set for translation from French into English were, on the whole, well done, and some of the renderings were excellent. Passages 2 (*a*) and 3 (*a*) brought forth some quaint translations, and the expression *nid d'âmes* troubled many, “bare of souls” and “no ladies” being two of its renderings. The grammar in 2 (*b*) was weak, not very many candidates getting really good marks for it.

A good many candidates chose to do the original French composition 4 (*a*). A few did it very well indeed. Many of the others would have got higher marks for their work if there had been less repetition, if they had known the gender of nouns like *fleur*, *arbie*, *jour*, &c., and if they had made the verbs agree with their subjects, and adjectives with the nouns they qualified. It was astonishing to find how many candidates wrote *niege* for *neige* and made *saison* masculine, although the gender of *saison* was purposely given at the end of 2 (*a*).

In the passage set out for translation from English into French (4 (*b*)) there was the usual misuse of the imperfect and the preterite (part definite) tenses. It requires constant practice to enable pupils to become proficient in the use of these tenses.

No. 22.—FRENCH.—*Intermediate Examination.*

This examination was poor, as the results will show. A few intelligent candidates did excellent work, but the general average was not high. A certain number of the candidates knew no French, and one wonders how they had the temerity to sit for an examination in this subject. Others again had but a limited knowledge of the French language; they evidently hoped by wild guessing to conceal their ignorance of the subject. Here are some fanciful translations taken at random from amongst many others: 1 (a). "When one kind of this pretty little town went in the direction of the mountains where the sun couches." "The valley of Saint Point is not a large fishing-place where the fish of some fill, or the rent shock making one enter two mountains." "Where the rents give shocks to the purse." "A wealthy man of this village found himself in an old castle alone for two days." 2 (a). "The goat hid behind a bunch of leaves." 3 (a). "A seal of black sealing-wax which the mother opened in heaven."

1 (b). Only a few good candidates did this well. *Il y serait, il y furent, il y était* were some of the translations of "there were." One candidate rendered "Have you been living?" by "*Était-vous éte habitant?*"

1 (c). Very few attempted this question.

4 (a). Some of the best candidates wrote excellent French composition, but much of the original French was very poor stuff. It was certainly original, but not in the sense in which the writers intended it. Much of it was such an exact mental translation from English into French that a Frenchman would require a good knowledge of English to be able to understand it. Here are some quotations from those original French texts: *Un promenade a la compagne; je alle pour un promenade; ma frere; les oiseau sont chantant; moi maison; mon maison; faissent and faissent for font.*

4 (b). Here again the intelligent candidates did good work. The rules for the use of the partitive article do not seem to be well known, and the imperfect and the preterite tenses troubled many of the candidates, as usual.

No. 27.—ELEMENTARY MATHEMATICS.—*Public Service Entrance Examination.*

The paper was, on the whole, well done, and the candidates showed a reasonable elementary knowledge. The worst faults were as follows: A very common begging of the question in the proof of No. 4—*e.g.*, if it was required to prove that AB is perpendicular to CD at B, "cut off BC, BD of equal length; join AC, AD; then the triangle ABC ABD have BC equal to BD, AB common, and AC equal to AD; therefore they are congruent, &c., and ABC is a right angle." There were many methods, but the same principle was exemplified in them all.

Another mistake in the same question was to assume that "the radius goes round the circumference six times as the crow flies," as one candidate put it, in order to prove that the angle subtended at the centre by a chord equal to the radius is 60° . This is putting the cart before the horse.

There was much ignorance of the definition of a parallelogram; many candidates sought to prove that the figure TUVX in question 5 had its opposite sides and angles equal, and omitted to prove that its opposite sides were parallel, which was easier, besides being the right thing.

In the algebra questions 7 and 8 were badly done. In the latter a vicious arrangement of the work is prevalent—e.g., $18a^4b - 144ab^4$, $15a^5 - 240ab^4$, $108a^5 - 144a^4b - 144a^3b^2 - 18ab(a^3 - 8b^3)$, $15a(a^4 - 16b^4)$, $36a^3(3a^2 - 4ab - 4b^2)$, &c. Each expression should be factorized separately, and the result exhibited by underlining it or leaving a space before the next is begun.

It may be said that while the papers as a whole were neatly written there was a general absence of effective arrangement.

No. 28.—ELEMENTARY MATHEMATICS.—*Intermediate Examination.*

The general style of the papers sent in by candidates was, on the whole, satisfactory; in most cases they were commendably neat, but the importance of accuracy in connexion with geometrical and algebraical graphical problems was not sufficiently realized. Thus in questions 1 and 6 a large proportion of the results were of little value for this reason. The practical exercises in geometry were not treated in a satisfactory manner. In No. 1 many used a protractor in drawing an angle of $67\frac{1}{2}^\circ$, or gave no indication as to how the angle they showed was arrived at. In No. 2 the correct answer was obtained by very few, and in No. 3 there was little or no attempt to eliminate by any method the errors arising from a single rough measurement of the circumference of a circle in terms of the radius; many merely stepped off the circumference with a pair of compasses extended to the length of the radius, and concluded that the fraction $\frac{1}{7}$ was to allow for the slight excess of the length of the circumference over the sum of the chords. The other questions in theoretical geometry were well done.

The algebra was not quite so satisfactory. Only a moderate percentage of correct answers were given to No. 7, a large number of candidates arriving in some way or other at a pure numerical result. Nos. 8 and 9 were only fairly well done. In No. 10 (i) the majority of errors arose from neglect to change the sign on removing brackets: the quadratic was in general solved correctly. No. 11 was well done, but a considerable number of answers showed that their authors had no appreciation of the current prices of such common articles as tea and sugar.

In No. 6 most candidates took the second alternative, but they were not alive to the importance of accurate drawing or the necessity

of explaining the mode of constructing the graph. Work of this kind appears to me to be of greater practical and educational value than the solution of linear equations. Though the greater number of candidates defined a "locus" correctly, yet, judging from the attempts at explanations, very few indeed really understand what a locus is. One or two good candidates who chose the first part of the question answered it very well indeed.

Nos. 29 and 30.—ELEMENTARY PHYSICAL SCIENCE.—*Public Service Entrance and Intermediate Examination.*

In the non-competitive section paper C was very well done on the whole, the paper A fairly well done, but the papers B and D were very badly done indeed. The majority of the B candidates and many of those taking the D paper seemed to know nothing more of their subject than they might have remembered from their primary-school work.

The competitive papers were, on the whole, very well done.

No. 31.—ELEMENTARY BOTANY.—*Public Service Entrance and Intermediate Examinations.*

The results in the competitive are considerably higher than those in the non-competitive class, and this in spite of the fact that the work of candidates in the former was marked with much greater severity than that of candidates in the latter. Speaking generally the work of candidates in the competitive class was what one might reasonably expect after a two-years course; and throughout there was ample evidence that, in most cases, the teaching had been of a thoroughly practical nature. This would lead to the conclusion that the poor results in the non-competitive class do not arise from the employment of faulty methods by the teacher. The weakest side of the work was undoubtedly in the department of plant physiology. Seeing that practically all agricultural operations, as well as the treatment and cultivation of plants generally, have originated from observation of the phenomena of nutrition and growth, it will be readily understood that physiology is the most important branch of practical botany. To help students to a satisfactory investigation of the various physiological phenomena of plants requires a knowledge of elementary chemistry as well as the ability to set up and use simple apparatus. Something more definite and specialized than the nature-study of the primary schools is required, though it would appear from most of the replies given to the question on germination that many teachers consider that nothing further is needed.

Question 1 (description of a plant-specimen) was in many cases well done, though even here there was often a tendency to devote several pages to the description of insignificant details, and to omit all mention of the cardinal facts of cohesion, adhesion, and number of members in the different whorls, on which classification is largely based. For

a candidate to devote two pages to a description of the texture of a fuchsia-leaf and then fail to state whether the ovary is superior or inferior shows, to say the least, an indifferent knowledge of relative values.

The floral diagram and longitudinal section of the flower, by means of which practically the whole structure may be shown, were rarely given. Drawings of individual members and of the flower as a whole were often well done; but these, though valuable in connexion with sketches that show the junctions and relative positions of the various whorls, are, after all, exercises in drawing rather than botany.

A word or two on the use of technical terms may be useful. Such terms as "androecium," "gynœcium," and "placentation," though often useful for the avoidance of circumlocution, are not necessary, and, where the candidate is doubtful of their meaning, may well be replaced by "stamens," "pistil," "position of ovules." It must not be forgotten, however, that the candidate who is able correctly to use these terms gains a great advantage in the saving of time resulting from the brevity thus attained. There was often misconception as to the true meaning of the following: pistil, style, stigma, ovary, carpel. Many candidates treated these words as synonyms.

It is necessary to again warn candidates not to describe any organ or part that is not present on the specimen provided. Such a course is beset with pitfalls. In a description of veronica one candidate stated that the fruit was succulent and indehiscent. In the specimen supplied no mature fruit was present, and accordingly it was difficult for a novice to say what form that fruit would finally take. Had no statement been made no marks would have been lost.

Question 2 (comparison of dicotyledonous and monocotyledonous seeds) was often poorly done. Frequently, students would describe the tissues of the mature plants and not the seeds at all. Much information was given regarding the vascular bundles and nature of the root systems, which was, of course, quite irrelevant. Provided that the student gave a clear description of the appearance and structure of the seeds in their normal dry condition, there was no objection to a brief comparison of the phenomena that accompany their germination. It was, however, possible to get full marks without it.

Question 3, relating to germination, was perhaps the worst answered of all. It was quite evident that in very few instances had the student carried out with his own hands experiments showing that moisture, warmth, and oxygen are, with respect to environment, the three essentials of germination. In many cases candidates merely described the changes through which the seed passed in the process indicated. Others again alleged that light was necessary to germination; while still others, totally misunderstanding the question, placed growing plants in different culture solutions, thus arriving at the conclusion that nitrates, phosphates, &c., were essential to the process. It is

hard to believe that the latter did not know the meaning of the word "germination." In many cases directions for experiments were not sufficiently precise—"Place the seed in a bottle without oxygen," or "Place the seed in a very cold room," gained no marks. The student, however, who placed broad bean seeds in a bottle of water from which the oxygen had been driven by boiling, and found that seeds germinated more readily in summer than winter, though not employing absolutely the best methods, showed, nevertheless, that he was drawing on personal experience.

Question 4, *re* storage of reserve materials, was well done, though few candidates mentioned oil as one of the forms that this material might take. As usual, a number of students included bulbs, corms, and tubers among the roots, and alluded to the fleshy branches of the cactus as "modified leaves."

Question 5, relating to culture solutions, was in many cases well done. It was expected that practical details showing that the student had himself performed the experiments would be given. Where such details were lacking there was generally other evidence to show either that the work had been done by the teacher, or that a mere description had been read from a book.

Question 6, dealing with adaptation to surroundings, was perhaps answered best of all. Many of the answers created the impression that there are schools where field-work is not neglected.

Question 7 was, as a rule, poorly answered not because the student did not know the plants forming the particular association, but because he had no true conception of what information was required. Something more than a mere list of plants was needed. Such questions as the predominance of certain types, their peculiar fitness to the particular environment, the relation between the different branches of the association should all be dealt with. Thus in the forest the interdependence of the following should be shown: trees, undergrowth, climbers, epiphytes, shade-loving vegetation of the forest-floor.

No. 33.—ELEMENTARY HYGIENE.—Public Service Entrance and Intermediate Examination.

On the whole the papers were much better done than those of the previous year. There was less irrelevant matter given and less energy wasted, though a good many candidates wasted time and lost in efficiency by attempting more than the required number of questions. The most marked defects were in the lack of practical knowledge. It was also evident that in some cases the teaching given or the text-books used were not modern.

Question 1: The majority were able to name and describe the structure correctly, though some suggested that it was "thorax," "vertebral column," or "pelvic girdle."

Question 2: Good on the whole.

Question 3: Many not yet clear about the distinctions between the kinds of blood.

Question 4: This question was not attempted by many candidates. Many evidently still believe that a hair is a tube rather than a rod of cells.

Question 5: Not well done. In regard to albumen all the answers were disappointing; scarcely any candidates—actually only two—gave evidence of having heard of the modern theories regarding digestive changes in albuminous foods.

Question 6: Too much mere book knowledge; scarcely any candidates appear to have examined any of the organs mentioned.

Question 7: Answers to parts (b) and (d) were confused. The other parts were generally good.

Question 8: Good on the whole, except that book knowledge was given unintelligently, and without the modifications that common-sense should have suggested in each case.

No. 34.—ELEMENTARY HOME SCIENCE (FIRST PAPER).—*Public Service Entrance and Intermediate Examinations.*

Answers far too sketchy, evidencing a superficial knowledge of the subject in the majority of cases.

Question 1: Rather well done.

Question 2: Much confusion between the various ways in which heat travels. Some answers, however, were good.

Question 3: Generally well done.

Question 4: Very poor answers.

Question 5: Much vagueness and inaccuracy.

Question 6: Rather well done.

Question 7: Only attempted by a few.

No. 35.—ELEMENTARY HOME SCIENCE (SECOND PAPER).—*Public Service Entrance and Intermediate Examinations.*

In many cases the answers were too scanty.

Question 1: Some very good answers were given. Milk proved to be the least known of the substances in question.

Question 2: Ideas as to the meaning of "chemical nature" were ill-defined; scarcely any knew what emery and whitening are.

Question 3: Some thought aluminium would be a suitable metal for making sieves, but in general good reasons were given for the metals chosen.

Question 4: Many candidates avoided this question.

Question 5: Some very clear answers were given, but in most cases the differences were not known.

Question 6: Some good answers, but many were confused. There was, in nearly all cases, failure to recognize that heat is one form of

energy, the old text-book idea that starch supplies heat *and* energy being prevalent.

Question 7: Very good answers on the whole. In most cases a clear explanation was given.

No. 36.—ELEMENTARY DAIRY SCIENCE.—*Public Service Entrance and Intermediate Examinations.*

The answers given here were frequently very indefinite in regard to important points. Such remarks as "after heating to a *certain* temperature," "and of a *certain* strength," were all too common. Again, in regard to pasteurization and sterilization, the following had apparently been given to candidates as satisfactory definitions: "Sterilization is heating under pressure; pasteurization is heating over pressure." From this juggling with words there naturally followed the statements—"Sterilization is boiling under pressure; pasteurization is boiling over pressure." It was only a step for one or two candidates to make—"Pasteurization is boiling under pressure." All that was required was a simple description of how candidates had carried out, or had seen carried out, the sterilization of milk-vessels, and of how in these milk had been pasteurized at home or in the factory.

From the work sent in it was quite evident that the majority of candidates had visited either butter or cheese factories, or both, and had made more or less careful note of the chief operations; but the indoor experimental work was, on the whole, weak. There were, of course, some pleasing exceptions. The papers in the competitive series were well ahead of the non-competitive ones, and I should have been well pleased if the standard attained in the former were that of the non-competitive group. The following remarks refer more particularly to the work of the non-competitive candidates.

Question 1: In answers to this question the details given were not sufficiently to the point. Descriptions were not clear enough. Simple diagrams and sketches of apparatus used especially were desired here, but frequently were found wanting.

Question 2: A surprising amount of inaccurate work was given in answer to this simple question. Where a careless mistake in calculation led to an unusual result, in some cases the average result, 1.032, was substituted as answer. In other cases an unusual result in specific gravity had seemingly been entered up without exciting notice.

Question 3: The majority of non-competitive candidates missed out the first mixing of the bulk milk before taking the sample for testing. Without careful attention to this the remainder of the work is rendered worthless.

Question 4: The first part of this question was answered very well; the last part was not treated so satisfactorily. This is an example of the indoor experimental work not receiving sufficient attention.

Question 5: I was astonished at the many poor attempts made to answer this question. The candidates should be quite familiar with the use of all the apparatus referred to. The use of the acid-hydrometer to test the strength of H_2SO_4 so constantly used in this work was not at all well known. In the non-competitive section only one candidate in seventeen was correct as regards its use.

Question 6: Some very foolish definitions were given here. This was due to a desire to give definitions rather than state how work is carried out. It is surprising that in regard to sterilization candidates are not instructed that this process is especially for treatment of milk-containers—*e.g.*, jugs, cans, &c.—and that commercially pasteurization alone is commonly employed when milk, cream, skim-milk, &c., are to be treated at all.

Question 7: A wide question, giving plenty scope in answering. On the whole the answers were good, but quite a number paid more attention to fine points in appearance rather than to testing the productive capacity of the cow by periodically weighing and testing her milk. One youth would be quite satisfied if on inspection the cow had “a narrow nose, a quick, intellectual head, and a long deep body.”

Question 8: Some really good answers were given to this question, but in many cases the details of the alkaline test had not been mastered fully.

No. 37.—ELEMENTARY PRACTICAL AGRICULTURE.—*Public Service Entrance and Intermediate Examinations.*

A disappointing feature of the papers examined was the distinctly inferior work presented by practically one-fourth of the candidates. The work which these candidates submitted was certainly not such as to convey the impression that it was the result of two years' systematic treatment of the subject. Rather would it seem that this subject had been hurriedly selected by these candidates at the last moment, with wholly inadequate preparation.

The papers submitted by the remaining candidates bore evidence of more systematic treatment, some of the answers being very fully and intelligently given, and indicating a clear understanding of the principles underlying the various operations described. Unfortunately, however, this full treatment was to the detriment of the remaining questions, as it was quite evident that had these young people more proportionately allotted the time allowed for the paper, they could have gained a higher percentage. In this connexion candidates should appreciate the importance of answering only what the question demands. Unnecessary detail and irrelevant matter crowded into an answer fail to realize a mark-value commensurate with the time spent in reproducing it. It should further be noted that a number of candidates lost marks through not reading the questions carefully. For example, in question 7 notes were made by one candidate on (a) pro-

pagation, (b) manures, (c) cultivation, without any reference at all to the subject for which the question clearly stated (a), (b), and (c) above were to be the headings.

Reference should be made to the apparent need in many cases of periodically testing the accuracy of the knowledge assimilated, and of ensuring the correct spelling of common terms, before candidates submit themselves to the final examination.

Question 1: The description of the method was fairly well done, but comparatively few were able to state the most suitable time of the year for the operation. Further, the object of it was in many instances not clearly understood. A pleasing feature, however, of a number of the answers was the quality of the diagrams illustrating the different stages of the operation.

Question 2: While many really good answers were given, this question perhaps more than any of the others revealed the scrappy nature of the knowledge of a number of the candidates as referred to above. The pistil was frequently described as "the inside part of the flower," or as "the female part of the flower," and simply left at that. Its component parts were not generally well understood, the style alone, in many instances, being regarded as the pistil. Similar in definiteness and inaccuracy characterized the notes on cross-pollination, the process being commonly referred to as "the taking of pollen from one flower to another" or "the mixing of the pollen of one flower with that of another." It was gratifying, however, to note that a number of the candidates who answered the question well seemed to realize the relationship between insects and flowers, and to appreciate the many interesting devices and modifications of structure of the latter, tending to favour cross-pollination. The notes on respiration of plants were, on the whole, disappointing. Either the topic was omitted or was inadequately or inaccurately discussed. From the answers in groups of papers with consecutive numbers—presumably from candidates from the same schools—it would appear that they had drawn a distinctly erroneous impression from the teachers' references to the respiration of plants. For example, the process is referred to as being "of two kinds: (a) daylight respiration, and (b) night respiration." The notes on the former, however, related to carbon-assimilation, which is not a respiratory process. This confusion evidently arises through carbon-assimilation being incorrectly described as a breathing process. In other cases respiration was confused with transpiration and described as such.

Question 3 was not generally well answered, although some 20 per cent. gained good marks. The weak papers showed either a lack of knowledge of the fertilizers supplying the plant-foods likely to be lacking in a soil, or inability to classify those the names of which were familiar.

Questions 4 and 7 were the most satisfactorily answered. In No. 4, however, a number of candidates showed a tendency to jump to

the required conclusion from insufficient data to justify it. The control experiment as a basis of reasoning was in many cases overlooked.

Question 5: The answers to this question incidentally showed that the candidates were generally familiar with the various specifics designed to combat the different groups of pests according to their method of attack, but unfortunately many incorrectly diagnosed the nature and modes of attack of the particular species named. Consequently they failed to prescribe effective preventive or remedial treatment. In other cases the details of the treatment to be employed were meagre.

Question 6 was poorly answered, particularly part (b). The illustrative sketches were in many instances drawn more largely from imagination than from visual memory.

No. 42.—BOOK-KEEPING AND COMMERCIAL CORRESPONDENCE (INCLUDING TOTS).—*Public Service Entrance and Intermediate Examination.*

Tots: The quality of the work in this subject leaves room for much improvement, and indicates the necessity for more attention being paid to this important branch of the work.

Question 2: The question asked for given transactions to be recorded by means of cash-book, day-book, purchase-book, and journal. Some used the first-named three and in addition journalized *all* the transactions, whilst others used the journal only. Very few of the candidates were able to state correctly the commencing capital, the majority showing the purchase price of the business acquired as capital, either alone or in addition to the correct figure. The treatment of the loan was also a stumbling-block to many. These transactions are very straightforward, and should be easily handled by candidates with a knowledge of the principles of the subject. Quite a number of candidates used a so-called "goods-book" instead of separate books for the record of purchases and sales. Others went further and, by introducing the commencing and finishing stock, made the "goods-book" serve the purpose of a goods account. Besides not being practical, this mode of treatment undoubtedly caused confusion in some minds. It should be noted that items appearing in the cash-book are original entries. There were instances of the cash-book being in itself correct, but where such items as "Received P.O." and "Cheque dishonoured" had been entered in the journal and posted therefrom. Where discount was deducted by a client and disallowed, very few treated the matter practically by making no entry in reference thereto. A cheque given partly in payment of interest and partly in reduction of principal was in many instances wholly charged against the loan, and a similar error was frequently made where exchange was added in making a remittance. An allowance made for damaged goods was frequently disposed of

by paying the amount in cash, while goods withdrawn for private use also appeared in many cash-books. The working of the profit and loss account and balance-sheet was, on the whole, well handled, although frequent instances occurred of assets appearing in the former and revenue items in the balance-sheet.

Question 3: The question on bills was fairly well done by those who attempted it. The most common error was in crediting "Bills receivable" on the dishonour of the previously discounted promissory note, or the omission of this entry altogether.

Question 4: The explanation of terms was fairly satisfactory, although some appeared to think that a "crossed" cheque must be endorsed, and that a "credit note" is synonymous with "letter of credit."

Question 5: There were many good answers to this theory question, although the majority seemed to lack a sound knowledge of the functions of the various books of account. One candidate asserts that the chief advantage of a petty cash-book is that it can be carried in the pocket.

Question 6: The requirements of a business letter seem to be fairly well appreciated, and there were many letters excellently worded and set out. On the other hand, too many candidates have a very poor idea of framing a business communication. A very common fault was the omission to give the addressee any title ("Mr." or "Esquire"), whilst not a few in writing on behalf of one person used the plural throughout.

No. 46.—DRAWING II (DRAWING WITH INSTRUMENTS).—*Public Service Entrance and Intermediate Examinations.*

While there has been a marked general improvement it is evident that not a few candidates sit for this paper without having received any training worthy of the name in the use of drawing-instruments. Others have not acquired the habit of making a critical inspection of their finished work in conjunction with a careful re-reading of the questions, a course that would lead to the discovery of the more absurd errors.

It was pleasing to find very few candidates solving problems by arithmetical methods. One of the exceptions used over four hundred figures in connexion with question 4.

Question 1: The construction of a scale incidental to this question was very much better attempted than in previous years. The majority of candidates made and graduated it quite correctly.

Question 2 was well answered by a large number. The commonest error was to make AB either more or less than $7\frac{1}{2}$ in.

Question 3, attempted by a large number of candidates, was the least satisfactorily answered of all. Many attempts showed ignorance

of the method of describing a circle through three given points. In some cases the construction-lines had apparently been erased in this, the one question where it was most important they should be left.

Question 4 was well answered. A few papers showed the sides in the ratio of 2 : 3 : 4 instead of the angles. A few others had made a side other than the longest 5 in. in length.

Question 5 was also well done by a majority of those who attempted it. The commonest fault was to make the thickness of the cross $\frac{1}{2}$ in. instead of $\frac{3}{8}$ in., the plan apparently having escaped observation.

Question 6 was fairly well answered. A few papers showed a pentagon for one of the plans. If one of the prisms had been pentagonal, additional lines (broken) would have been shown in the elevation.

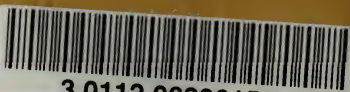
INDEX TO EXAMINATION PAPERS.

(J.F.P. = Junior Free Places; P.S.E. = Public Service Entrance, &c.; S.F.P. = Senior Free Place, &c. (Intermediate); J.N.S. = Junior National Scholarships.)

Subject.					Class.	No.	Page.
Agriculture, Practical	..	..	..	..	P.S.E.	37	58
Arithmetic	..	..	..	..	J.N.S.	7	12
Arithmetic	..	..	..	..	J.F.P.	8	13
Arithmetic	..	..	..	..	P.S.E.	25	44
Arithmetic	..	..	..	..	S.F.P.	26	45
Book-keeping	..	..	..	..	P.S.E.	42	67
²¹⁴² Book-keeping (Tots)	..	..	..	..	P.S.E.	43	70
Botany	..	..	..	..	P.S.E.	31	53
Dairy Science	..	..	..	..	P.S.E.	36	58
Drawing—							
I—Instructions to Supervisors	..	..	..	..	P.S.E.	44	72
I—Instructions to Candidates	..	..	..	..	P.S.E.	45	72
II—Drawing with Instruments	..	..	..	..	P.S.E.	46	73
Freehand	..	..	..	..	J.N.S.	11	17
Freehand	..	..	..	..	J.F.P.	12	18
Instrumental	..	..	..	..	J.N.S.	13	19
Instrumental	..	..	..	..	J.F.P.	14	21
English	..	..	..	..	J.N.S.	5	10
English	..	..	..	..	J.F.P.	6	11
English I	..	..	..	..	P.S.E.	15	23
English I	..	..	..	..	S.F.P.	16	25
English II	..	..	..	..	P.S.E.	17	27
English II—Dictation	..	..	..	..	P.S.E.	18	28
French	..	..	..	..	P.S.E.	21	33
French	..	..	..	..	S.F.P.	22	35

INDEX—*continued.*

Subject.					Class.	No.	Page.
Geography	..	..	..	..	J.N.S.	9	14
Geography	..	..	..	..	J.F.P.	10	16
Geography	..	..	..	..	P.S.E.	38	59
German	..	..	..	..	P.S.E.	23	38
History	..	..	..	..	P.S.E.	39	62
History and Civics	..	..	..	..	J.N.S.	3	8
History and Civics	..	..	..	..	J.F.P.	4	9
Home Science I	..	..	..	..	P.S.E.	34	56
Home Science II	..	..	..	..	P.S.E.	35	57
Hygiene	..	..	..	..	P.S.E.	33	55
Latin	..	..	..	..	P.S.E.	19	29
Latin	..	..	..	..	S.F.P.	20	31
Maori	..	..	..	..	P.S.E.	24	41
Mathematics	..	..	..	..	P.S.E.	27	46
Mathematics	..	..	..	..	S.F.P.	28	47
Physical Science I	..	..	..	..	P.S.E.	29	49
Physical Science II	..	..	..	..	P.S.E.	30	50
Science, Elementary	..	..	..	..	J.N.S.	1	3
Science, Elementary	..	..	..	..	J.F.P.	2	5
Shorthand	..	..	..	..	P.S.E.	40	63
Shorthand	..	..	..	..	S.F.P.	41	66
Zoology	..	..	..	..	P.S.E.	32	54



3 0112 062061533